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ABSTRACT

The Communications Tech and Policy section of the Proceedings contains the following eight papers: "The Wayward Bureaucracy: Government Assessment of FCC Organization and Performance" (Philip M. Napoli); "Understanding Internet Adoption Dynamics" (David J. Atkin, Leo W. Jeffres, and Kimberly Neuendorf); "Online Newsgathering Trends, 1994-96" (Bruce Garrison); "Does WEB Advertising Work? Memory for Print vs. Online Media" (S. Shyam Sundar, Sunetra Narayan, Rafael Obregon, and Charu Uppal); "Duopoly Market Structure as Public Policy: Lessons from the Cellular Telephone Industry" (Hugh S. Fullerton); "The Internet: Is the Medium the Message?" (Mark W. Tremayne); "Flying Freely but in a Cage: An Empirical Study of the Potential Effects of the Internet on Democratic Development in China" (Edgar Shaohua Huang); and "Bystanders at the Revolution: A Profile of Non-Users of Computer Mediated Communication in Hong Kong Universities" (Charles Elliott). Individual papers contain references. (CR)

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The Wayward Bureaucracy: Government Assessment of FCC Organization and Performance

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The Wayward Bureaucracy

Abstract

This paper reviews and critiques the findings, recommendations, and methodologies of 16 presidentially and congressionally sponsored analyses of FCC organization and performance. These government-commissioned analyses overwhelmingly support an organization-level framework of regulatory behavior, in contrast to the academic literature, which has found support for a much broader range of regulatory behavior theories. The recommendations of these reports tend to advocate greater control of the FCC for the sponsoring institution, indicating that these analyses serve primarily as tools in an ongoing contest between the legislative and executive branches for greater control of the FCC.

The Wayward Bureaucracy: Government Assessment of FCC Organization and Performance

Introduction

The federal government has a long history of analyzing the behavior of the Federal Communications Commission (Robinson, 1978, p. 354). According to Emery (1971), "Probably no other agency of the Federal government has been the object of as much vilification and prolonged investigation by Congress as has the FCC. . . . [T]he FCC has been under Congressional investigation or the threat of one virtually every year since it was established" (p. 395). During the first seven years of the FCC's existence, the House and Senate introduced eleven different resolutions to subject the Commission to formal investigation (Emery, 1971, p. 396).

This intense interest in the FCC has produced a number of published studies. These studies are of considerable importance to students of FCC behavior, given that government-sponsored investigators are likely to have greater access to FCC personnel and data than is the typical academic researcher. Therefore, they are an important component of the regulatory behavior literature that has focused on the FCC.

However, given that these studies are also a product of the political process, they can provide insights into the relationship between various government bodies and the FCC. While, as an independent regulatory agency, the FCC is intended to function with a certain degree of independence from

congressional or presidential influence, "there is just no insulating the FCC from politics" (Krasnow, Longley & Terry, 1982, p. 34). These government-commissioned analyses of the FCC are one of many tools of political influence available to the executive and legislative branches in their efforts to affect the behavior of the Commission. Consequently, an analysis of these studies can provide important insights into the politics of telecommunications regulation.

However, the findings of these studies, their recommendations for how the FCC should be changed, and their methodologies, have yet to be systematically analyzed within the context of regulatory behavior theory and research. Some analysts of FCC policymaking have offered brief characterizations of these studies. Horwitz (1989), in his analysis of telecommunications regulation, argues that government-sponsored investigations of regulatory performance:

> generally place the onus of . . . failure upon bureaucratic irrationality. . . . All the government reports berate regulatory agencies for inefficiency and for failing to analyze and plan. . . . These reports and their recommendations are flawed . . . because they imply that the failings of regulatory agencies are due to their misorganization and poor leadership. (p. 29)

Similarly, Le Duc (1973) states, "If there is one thread linking a series of various governmental studies of the FCC, extending from the inception of the agency through the beginning of this

decade, it has been the nearly universal condemnation of its efficacy in formulating communications policy" (p. 29).

Beyond these brief characterizations, these government-commissioned studies of the FCC have not yet been thoroughly reviewed and analyzed within the context of the regulatory behavior literature. This paper approaches this task with a number of specific questions in mind:

1) What are the dominant theoretical frameworks supported by these investigations?

2) Are there significant differences between analyses commissioned by Congress and those commissioned by the president?

3) To what degree can the findings and recommendations of these analyses be attributed to political factors as opposed to genuine public interest objectives?

4) How do these studies compare in terms of their findings and methodologies to academic analyses?

Answering these questions should provide insights not only into the behavior of the FCC, but into its relationship with the executive and legislative branches as well.

Regulatory Behavior and the FCC

Before examining the findings, recommendations, and methodologies of these studies, it is important to review the theory and research on FCC behavior in order to have the proper interpretive lens. What is most striking about the literature on FCC behavior is the wide variety of theories of regulatory behavior that have been proposed and supported empirically.

While useful categorizations of these different theoretical frameworks have been offered by Mosco (1979) and Horwitz (1989), for the purposes of this analysis, these frameworks have been organized into three categories: (a) Political, (b) Industrial, and (c) Organizational. Each of these is summarized briefly below.

Political Theories of Regulatory Behavior

The political category of regulatory behavior theory asserts that political institutions, such as Congress or the president, are the primary factors determining FCC behavior. The congressional dominance model of course asserts the centrality of Congress (Ferejohn & Shipan, 1989b; Krasnow & Shooshan, 1973). The relevant subcommittees, in particular, are considered the locus of influence (Heffron, 1983, p. 45; Tunstall, 1986, pp. 245-246). Congressional influence stems from a variety of sources, including the power of appropriation (Devins, 1993, p. 167; Gellhorn, 1978; Owen & Breautigam, 1978); the Senate's power to approve the president's FCC commissioner appointments (Krasnow, Longley & Terry, 1982, pp. 107-108); the threat of direct legislation (Ferejohn & Shipan, 1989b); and Congress' oversight and investigation authority (Devins, 1993; Krasnow, et al., 1982). Case study research has often found support for the congressional dominance model (Ferejohn & Shipan, 1989b; Krasnow, et al., 1982; Krasnow & Shooshan, 1973), though in some instances researchers have concluded that Congress' influence efforts are not always successful (Devins, 1993).

The president is also an important factor within the political framework of FCC behavior (Krasnow, et al., 1982, pp. 66-69). The president has the power to appoint FCC Commissioners and designate the chairman. The power of appointment can clearly be utilized by the president to staff the FCC with like-minded personnel (Williams, 1993, p. 47). Also, given that the president's power to designate the FCC's chairman is not subject to approval by Congress, some have suggested that, through the chairman, the president is able to significantly affect the policy direction and the decision-making of the FCC (Williams, 1993, p. 48). Quantitative studies of FCC decision-making have found the party of the appointing president to be a significant predictor of commissioner voting behavior (Canon, 1969; Cohen, 1986), while historical studies have reached similar conclusions (Lichty, 1961/62, 1962), with Williams (1993) claiming that the regulatory philosophy of the appointing president is the single best predictor of commissioner voting behavior (p. 45).

Industrial Category of Regulatory Behavior Theory

The industrial category of regulatory behavior theory encompasses those approaches that begin with the assumption that the regulated industries are the primary determiners of regulatory behavior. "Capture" theory, perhaps the theory of regulatory behavior most frequently applied to the FCC (Horwitz, 1989, p. 27), is the primary framework in this category. Some analyses have found evidence that the FCC is--to varying degrees--"captured" by the industries it regulates, due primarily to the

"revolving door" that exists between government service and industry (Berner, 1976; Cohen, 1986; Gormley, 1979; Lichty, 1962). Under this perspective, regulators drawn from the regulated industry are inherently more sympathetic to industry interests than regulators without industry experience, while the incentive of post-regulatory employment within the regulated industries also prompts sympathetic treatment.

Organizational Category of Regulatory Behavior Theory

The organizational category regulatory behavior theory focuses primarily on organization-level variables and their effects on FCC behavior. For instance, inefficiencies in bureaucratic organization and structure, particularly in terms of information gathering and processing, are considered primary determinants of FCC behavior (Braun, 1994; Le Duc, 1973; Mosco, 1975, 1979). A second common assertion of organization-level analyses is that bureaucrats, primarily concerned with maintaining and improving their position, either consciously or unconsciously make decisions that preserve or expand the existing bureaucracy, regardless of whether such decisions are in the public interest (Le Duc, 1973, pp. 27-28). A final key argument of the organizational framework is that the regulatory personnel are themselves inadequate for the tasks at hand. The comparably low pay of government work and the lack of upward mobility act as deterrents for talented and motivated personnel. As a result, the regulatory agency functions at a lower level of efficiency and effectiveness (Emery, 1971, p. 393).

The main point of this brief overview of the regulatory behavior literature that has focused on the FCC is that the literature is extremely diverse in terms of the theoretical frameworks that have been developed and supported empirically. FCC behavior appears to be the product of a variety of influences and no one theoretical perspective has adequately explained it (Besen, et al., 1984, p. 179).

Government-Sponsored Studies of the FCC: Descriptive Information

This data set begins with the 1932 report entitled The Federal Radio Commission: Its History, Activities and Organization, a primarily descriptive report prepared for both Congress and the president by the Brookings Institution. The data set concludes with the 1995 report entitled Creating a Federal Communications Commission for the Information Age, prepared for the president's Commission on Reinventing Government. A total of 16 separate government-commissioned reports were included in the analysis. (The findings, recommendations, and sponsors of these reports are summarized in the Appendix.) Six of the 16 government-sponsored analyses of the FCC were prepared for the president, while the remaining eleven were prepared for Congress (see Appendix).

Whether congressionally or presidentially sponsored, often these analyses of the FCC were part of a much larger context, such as analyses of the regulatory agencies in general (see Landis, 1960; President's Advisory Council on Executive Organization, 1971; U.S. House of Representatives, 1960; 1976;

U.S. Senate, 1977a, 1977b), or discussions of the future of American telecommunications policy (see McMahon, 1958; President's Communications Policy Board, 1951; President's Task Force on Communications Policy, 1968; United States General Accounting Office, 1981).

Findings of Government-Sponsored FCC Analyses

Regardless of whether the analyses were sponsored by the legislative or executive branch, they are enormously consistent in the extent to which they support an organization-centered framework of FCC behavior and provide little, if any, evidence supporting the industrial or political frameworks. The first Hoover Commission report (Golub, 1948) is a typical example. The report was commissioned by the President's Commission on Organization of the Executive Branch of Government, though the impetus for creating the commission came from Congress and not the president (Moe, 1984/85, p. 31; U.S. Commission on Organization of the Executive Branch of Government, 1949, p. vi). The report criticizes the FCC for a lack of coordination among bureaus (p. II-21), a lack of interest in long-range planning (p. II-22), a failure to reappraise policies (p. II-45), a lack of a regulatory philosophy (p. IV-10) and a high turnover rate (p. II-22). These are all clearly organization-level factors. External institutions such as Congress, the White House, or the regulated industries are in no way accountable for these flaws in the Commission's operation.

While the report does address the possibility of external

influences affecting behavior, the findings provide no support for this perspective. Regarding the possibility of presidential influence via the chairman, the report states, "There is no indication, moreover, that the President has succeeded in achieving Commission compliance with his desires through pressures exerted by the chairman" (p. III-3). Nor does the report find any evidence that the president attempts to fill the Commission with appointees sympathetic to his views: "The appointments to the Commission, on the whole, do not appear to have been designed to enable the President to dominate the Commission's policies" (p. II-5). This rejection of the possibility of presidential influence starkly contrasts with the findings of Cohen (1986), Williams (1976, 1993), and others, who have found significant relationships between the party of the appointing president and commissioner behavior.

The Hoover Commission report reaches similarly innocuous conclusions in terms of Congress' role. The report explains congressional interest in the FCC as follows:

> The activities of the Commission are probably of more interest to the average member of Congress than the operations of any other independent regulatory agency. The impact of communications upon our national life is a matter which cannot escape their notice and interest. In particular, of course, the importance of broadcasting as a means of mass communication is brought home to members of Congress in a direct and personal manner. (Golub, 1948, p.

III-34)

The report concludes that the extent to which Congress influences the Commission's policies and decisions is a "matter of conjecture" (Golub, 1948, p. III-35). Nor does the report find any evidence of the appropriations committees affecting decisions or policies (Golub, 1948, p. III-39). Finally, the report even rejects the idea that the regulated industries have an impact on FCC behavior. According to the report:

> The total effects of industry pressures upon the Commission's activities are difficult to appraise. It is questionable that the Commission has responded consciously to these pressures. There can be no doubt that the Commission has been seeking to act in the public interest rather than in those interests of industry which may be incompatible with the public interest. (Golub, 1948, p. III-56)

Clearly, the "capture" theory, despite being the most prominent framework among academic analysts of the FCC, is granted virtually no credence in the Hoover Commission's analysis.

Organization-level factors dominate other congressionally sponsored analyses of the FCC as well. Again arbitrary decision-making and a failure to establish clear standards are frequently cited problems (McMahon, 1958, pp. 154-157; U.S. General Accounting Office, 1979, pp. 44-47; U.S. House of Representatives, p. 276; U.S. Senate, 1977a), as are failures to effectively analyze policy (U.S. General Accounting Office, 1979,

p. 78; 1983, p. 14), and personnel inadequacies (Graham & Kramer, 1976; U.S. General Accounting Office, 1979, pp. 90-98; 1983, p. 32; U.S. House of Representatives, p. 246). The Graham and Kramer (1976) report, which focuses exclusively on the appointment process of FTC and FCC commissioners, goes to great lengths in arguing that the Senate has traditionally made little use of its power to approve presidential appointments: "In short the Senate did not impose much in the way of standards on the President except in the most extreme instances. Indeed, there was an unspoken presumption that the appointee was fit by the fact that he had been nominated" (p. 402).

A similar pattern of organization-level attributions arises within the presidentially sponsored analyses. The Landis (1960) report commissioned by President-elect Kennedy cites a lack of qualifications among Commission personnel (p. 36) and an inability to plan (p. 53) among the primary factors inhibiting FCC performance. The report is particularly critical of the FCC's leadership, going so far as to say that "The quality of its top personnel is, of course, primarily responsible for these defects" (Landis, 1960, p. 53). A report commissioned eight years later for President Johnson cites a lack of long-range policy planning and inadequate technical staff as the primary factors affecting the quality of policymaking (President's Task Force on Communications Policy, 1968, pp. 2-22). Similarly, a 1971 analysis of selected independent regulatory agencies (commonly referred to as the Ash Report, after the report's

primary author) prepared for President Nixon attributes regulatory shortcomings to factors such as a failure to attract quality personnel, inadequately trained staff, and the inflexibility of the collegial form (President's Advisory Council on Executive Organization, 1971, pp. 4-21). Finally, a 1995 report prepared for the president's Commission on Reinventing Government focused on organizational issues such as inadequate technical resources and an obsolete organizational structure (Richards, 1995).

The key point of this review is that government-sponsored analyses of the FCC have overwhelmingly supported the theory that FCC behavior is primarily determined by organization-level variables. This is a stark contrast with the academic research on the FCC, which has attributed Commission behavior to a broader range of influences, including Congress, the president, and the regulated industries. One possible reason for this divergence is that the greater access to Commission data and personnel afforded these studies contributed to a more theoretically consistent and more accurate set of findings. Of course, one could also argue that, as products of the political process, these studies primarily reflect the concerns and interests of those who commissioned them. Consequently, any information uncovered in these analyses that places any responsibility for FCC failures with those commissioning the study may be likely to go unreported. An examination of the recommendations of these reports provides support for this characterization of FCC

analyses as primarily political--rather than analytical--instruments.

Recommendations of Government Sponsored Analyses of the FCC

A recurring pattern among government sponsored analyses of the FCC is that they frequently advocate increased responsibility or influence for the institution commissioning the report. For instance, the 1951 report prepared by the President's Communications Policy Board recommends the creation of a three-man Telecommunications Advisory Board within the Office of the President to handle tasks such as the formulation of broad national policies for national and international telecommunications issues (p. 206)--a clear effort to transfer influence from the FCC to the White House. The Landis (1960) report to President-elect Kennedy recommends an increase in the FCC chairman's authority (p. 85), a shift which could significantly increase the president's influence. The report also advocates greatly increasing the reorganization powers of the president, concluding that "The Executive, moreover, is less beset by the vested interests in bureaucracy that too often find support from members of Congress" (Landis, 1960, p. 36). The report actively attempts to deflect potential criticism that it advocates excessive power for the executive branch:

> The fact that the Executive Office of the President will play a large part in the architectonics of particular administrative programs should not be utilized as a basis for the claim of executive immunity from Congressional

> scrutiny. The establishment of national goals to be effective must involve . . . teamwork between the Executive and the Legislative. Weaknesses in planning or in the execution of plans are a matter of broad public concern and the Congress has its duty to discover and divulge these weaknesses, assess the blame for their occurrences, and assist in making such provisions as it can for their cure. (Landis, 1960, p. 83)

This passage gives a good sense of the degree to which these analyses of the FCC must negotiate a treacherous political environment.

Similarly self-serving recommendations appear in the congressionally sponsored analyses. The first Hoover Commission report commissioned by Congress makes no recommendations regarding the Congress-FCC relationship, yet it does recommend amending the Communications Act to require the president to show cause for the removal of FCC commissioners (Golub, 1948, p. IV-55)--clearly an effort to reduce presidential power. A 1958 study commissioned by the Committee on Interstate and Foreign Commerce of the House of Representatives advises that Congress should undertake the development of FCC standards and policies, given that "The Commission has, after more than 20 years of operation, by itself been unable to develop a definite set of standards" (McMahon, 1958, p. 160). In addition, the report advises "that standing committees make full use of their authority under the Reorganization Act to study the overall

operations of the Commission" (p. 163). Other recommendations include regular meetings between the chairman of the Commission and members of the interested congressional committees and periodic reviews of Commission activities at the beginning of each Congress (McMahon, 1958, p. 163).

The Graham and Kramer (1976) study of FTC and FCC appointments, commissioned by the Senate Committee on Commerce, recommends increasing the size of the Senate staff dealing with Commission nominees, and that the Senate conduct its own independent inquiries into the fitness of nominees. The report also recommends full Senate access to any investigative checks conducted by the White House on a nominee (Graham & Kramer, 1976, p. 421). Similarly, the 1976 Moss report, commissioned by the House of Representatives, recommends that "Congress intensify its oversight function to strengthen and assist resolution of Commission policies" (U.S. House of Representatives, 1976, p. 276). Ultimately, the report goes out of its way to abdicate Congress of any responsibility for FCC shortcomings, while at the same time advocating greater congressional control, stating that "Although the Commission's lack of policy cannot be attributed to the Congress, we believe the Congress should establish closer relations with the Commission for the purpose of clarifying legislative intent" (p. 246). Ultimately, the report advocates a virtual congressional carte blanche in terms of relationships with the regulatory agencies, concluding that "To the extent that Congress, on behalf of the electorate, desires to assert closer

control over independent regulatory agencies it can, with minimal limitations, do so" (p. 439).

The Senate-commissioned Study on Federal Regulation (1977a, 1977b) recommends that regulatory agencies submit a list of agency goals and priorities for congressional approval. The study also recommends systematic congressional review of the regulatory agencies, greater congressional access to information regarding the regulatory agencies, and increases in appropriations committee staff (U.S. Senate, 1977b). Finally, a 1979 General Accounting Office report to the Senate Subcommittee on Communications recommends that the Senate be granted the power to approve the president's designation of chairman (p. ii).

In sum, while congressionally and presidentially sponsored analyses of the FCC reach similar conclusions in terms of the problems affecting the Commission's regulatory process, they differ substantially in terms of their proposed remedies. Congressional reports tend to make recommendations strengthening Congress' influence over the Commission, while those sponsored by the Executive branch advocate greater presidential power. This pattern of recommendations certainly implies that, while the findings of these reports may be generally apolitical, their recommendations are not. Clearly these analyses are used by the executive and legislative branches as tools in an ongoing struggle to achieve greater influence over the activities of the FCC.

Methodologies of Government Sponsored FCC Analyses

In assessing the history of government analysis of the FCC, it is also important to consider the methodologies used by these analyses. From a methodological standpoint, these analyses can be divided into four categories. They are: (a) Historical/legal studies of communications policymaking and the FCC (Graham & Kramer, 1976; McMahon, 1958; U.S. General Accounting Office, 1979; 1981); (b) Interviews with FCC commissioners and staff (President's Communications Policy Board, 1951; Richards, 1995; U.S. General Accounting Office, 1979, 1981; 1983; U.S. Senate, 1977a, 1977b); (c) Congressional hearings and testimony (U.S. House of Representatives, 1960, 1976); and (d) Studies with no explicitly defined methodology (Golub, 1948; Landis, 1960). Some studies are difficult to categorize methodologically. For instance, the Ash report states that its findings and recommendations are based on:

> [T]he opinions of participants in, and observers of the regulatory process, together with our own analysis of the history, current needs and current structure of regulation. Our analysis also involved detailed consideration of existing regulatory statutes, previous studies, and expert commentary. (President's Advisory Council on Executive Organization, 1971, p. iv)

Given such a methodology, it is difficult to determine the basis of the report's findings or recommendations.

None of the government sponsored analyses studied here conducted any quantitative analysis of Commission behavior,

though this has been a common method among academic analyses of the FCC (Canon, 1969; Cohen, 1986; Gormley, 1979; Hill, 1991; Linker, 1983). Former FCC Commissioner Lee Loevinger (1968) has criticized qualitative approaches to studying regulatory behavior:

> [Y]ou cannot determine the function of a bureaucracy by parsing its statutory grant of jurisdiction, or ascertain its structure or operation by examining its table of organization. The bureaucracies simply cannot be understood or effectively studied in terms of substantive rules and procedural formalities of the kind that serve reasonably well for understanding court law. The need is for quantitative methods, statistical analyses, principles of group dynamics, techniques and principles of the kind employed in the behavioral sciences. (p. 9)

While there are of course pros and cons to qualitative and quantitative methods, the main point here is that government studies of the FCC have been <u>exclusively</u> qualitative in those instances in which a distinct methodology was described.

A potential methodological problem arises from the fact that, whether through interviews or congressional testimony, FCC personnel were the primary source of information for many of these analyses. Certainly then, the findings should adhere closely to what those within the FCC consider to be the primary influences on the Commission's behavior. It is therefore not surprising that the organization-level findings characteristic of

the government analyses are very closely mirrored in the writings of FCC commissioners. For instance, former Commissioner Nicholas Johnson (1973) cites a lack of resources as a primary factor affecting the commission's ability to respond to new technologies (p. 136). In a Yale Law Journal account of "A Day in the Life" of the FCC, he provides a virtual summary of the primary findings of over 50 years of government analysis:

> The Commission lacks data, makes no independent analysis, relies heavily on information provided by interested parties, considers broad question piecemeal, defers to industry interests, postpones difficult decisions, hopes for compromises that the agency can ratify, and fails to anticipate major problems before they arise. (Johnson & Dystel, 1972, p. 1580)

Similarly, former Commissioner Glen O. Robinson (1978) cites organization-level factors such as procedural inefficiency, inadequate long-range planning, and an underqualified staff as the primary impediments affecting FCC policymaking. Lee Loevinger (1968), drawing upon his experience as an FCC commissioner, also focuses on organization-level variables in his analysis of government bureaucracy. According to Loevinger (1968), "government officials generally seek to maximize the power of their positions. There is no other hypothesis which so fully and consistently explains the actions of most policy-making bureaucrats, and this hypothesis does fit observed behavior in the overwhelming majority of cases" (p. 10). Consequently, he

concludes, bureaucrats tend to be "inflexible, static and conservative, rather than adaptive, innovative or creative. Analysis of the complexus of motivations and rewards prevailing in bureaucracies discloses that this tendency is inherent in the system" (Loevinger, 1968, p. 11). Even Newton Minow (1964) was extensively critical of FCC bureaucracy, describing it as resistant to new technology and beholden to the status quo (pp. 300-301).

Certainly, as former members of the Commission, these analysts provide valuable insights into the workings of the FCC. At the same time, it is unlikely that a member of an organization will provide the most well rounded and objective analysis of that organization. Therefore, the government's reliance on FCC personnel for much of its analytical data raises questions as to the accuracy of the findings.

Specifically, information obtained from FCC personnel is subject to the distortions characteristic of "upward" communication (i.e. communication directed from a subordinate to a superior) (Jablin, 1992). While the FCC is technically an independent regulatory agency, its reliance upon the executive and legislative branches for funding certainly lends a superior/subordinate character to the relationship, which may contribute to communication distortions. In discussing the FCC's handling of broadcast license renewal regulations, Cole and Oettinger (1973) demonstrate that "the rules of the renewal game reported to Congress and those actually observed are not always

the same" (p. 146). Cole and Oettinger (1973) ultimately conclude that "what the FCC reported to Congress was the theory of renewal, not the actual process of renewal" (p. 172). Schwartz (1959) documents a shocking amount of misrepresentation among FCC personnel testifying before Congress. These findings raise questions about the validity of conclusions derived primarily from interactions with FCC personnel.

Why, however, would Commission personnel engage in such apparent self-criticism by citing organization-level factors as central to the inadequacies of the FCC, while ignoring external sources of influence such as Congress, the president, and the regulated industries? The research on distortions in upward communication indicates that, within a hierarchy, individuals of a lower rank will omit critical comments when communicating upward (Jablin, 1992, p. 289). This finding suggests that FCC personnel may tend to omit the executive and legislative branches as sources of negative influence within the Commission when reporting to congressionally and presidentially sponsored investigators. FCC personnel are likely to be cognizant of not angering or offending the holders of the purse strings by blaming them for adversely affecting the regulatory process. At the same time, citing organization-level factors is probably the response most likely to generate increased funding. According to Arnold (1979) "budgetary security"--that is, the maintenance of the agency's budget--is the primary occupational goal of any bureaucrat, while the secondary motivation is "budgetary growth"

(p. 21). Increasing the Commission's budget is likely to be the only remedy for problems such as inadequate analytical resources and underqualified, undermotivated personnel.

In conclusion, government analyses of the FCC are somewhat suspect methodologically. Some reports fail to articulate a specific methodology. Those reports that do specify a methodology are exclusively qualitative in nature, relying primarily on analyses of policy documents or on information provided by FCC personnel. The degree to which such approaches alone can adequately assess regulatory behavior is questionable.

Conclusion

This study has examined the findings, recommendations, and methodologies of 15 government-commissioned analyses of the FCC. The findings of these analyses overwhelmingly support the organizational framework of regulatory behavior theory. Factors such as inadequate long-range planning, insufficient resources, and underqualified personnel are repeatedly characterized as the primary factors affecting the performance of the FCC.

These government-commissioned studies provide little evidence supporting either the political or industrial frameworks of regulatory behavior theory, in stark contrast to the diversity of findings characteristic of the academic research on FCC behavior. There are a number of potential explanations for this difference. It may be that the methodologies employed biased the conclusion in this direction. Or, it may be as Schwartz (1959) and Wilson (1989) have argued, that such analyses are explicitly

intended to have no political repercussions, therefore questions about the role of political actors such as Congress and the president remain essentially unasked, or that findings regarding their role go unreported. Of course, if the findings of these studies intentionally neglect important sources of influence upon the FCC's behavior, then reform efforts based on these findings are likely to be ineffective (Calvert & Weingast, 1982, p. 562).

This is not to say that these analyses are completely devoid of political purpose. These analyses have often been characterized as primarily a form of political control of the Commission, whereby investigations and analyses are used as signals of displeasure with FCC behavior. If this is indeed the case, then the FCC must be among the most unruly of agencies, a "runaway animal," as it has been described by Senate Commerce Committee Chairman Ernest Hollings (Ferejohn & Shipan, 1989a, p. 301). According to Weingast and Moran (1982), "Hearings and investigations . . . are not forums for the rational consideration or public airing of policy alternatives; they are tools for imposing sanctions on errant agencies" (p. 34).

If we accept this characterization, then the number of investigations and analyses of the FCC indicate that the Commission has seldom performed to the satisfaction of either Congress or the president. This situation shows no sign of abating, as the House of Representatives recently decided to hold oversight hearings on the FCC's handling of the implementation of the Telecommunications Act of 1996, apparently out of disapproval

of the Commission's activities to date in implementing the Act (Schneider, 1996). Kittross (1980) points out that few of the analyses discussed here have led to any major changes in the FCC (pp. iv-v) (see also "Reorganization Plan No. 11" (1950), for an example of proposed changes being rejected by Congress), which lends credence to the idea that these analyses are primarily signals of intensified government interest or displeasure, not public interest-motivated efforts to evaluate and modify the functioning of the FCC.

This analysis indicates that the reports also provide analytical ammunition in the ongoing struggle between the legislative and executive branches to garner greater control over the activities of the FCC. The recommendations of these reports demonstrate a pattern of advocating increased authority and power for the institution commissioning the analysis. Congressionally sponsored analyses recommend changes such as increased congressional oversight of the FCC and increased congressional power in approving appointments. Presidentially commissioned analyses, on the other hand, advocate changes such as increased chairman power and increased presidential power in reorganizing the Commission. Clearly, the process of government analysis of the FCC appears to serve as more than a method by which Congress communicates displeasure with FCC performance and thereby indirectly affects behavior. These analyses also serve as a method by which the executive and legislative branches attempt to modify the structure of their relationship with the FCC in an

ongoing contest for greater control of the Commission.

In order to better assess the validity of these conclusions it is necessary to engage in deeper historical analysis of the political contexts in which each of the reports discussed here was generated. This analysis has devoted little attention to the changing political environment in which the FCC has operated, the impact these reports have had on FCC operation and organization, and the important political actors who have been involved in assessing and influencing the Commission's behavior. Research into these areas should provide important insights into how the congressional and presidential relationships with the FCC have affected the structure, functions, and policymaking activities of the Commission.

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Appendix

Summary of Government Analyses of the FCC

Title	Prepared for	Findings	Recs.
The Federal Radio Commission: Its History Activities and Organization (1932)	Executive and Legislative Branches	-Descriptive	Further analysis of Commission necessary
Final Report of the Attorney General's Committee on Administrative Procedure (1941)	President	-Unfair decision-making -Delays	-Hold license hearings in field -Require annual report of rulemakings
Staff Report on the FCC (Hoover Commission Report) (1948)	Commission on Organization of Executive Branch of Government (Congress)	-Lack of planning -Failure to reappraise policies -Hesitancy to enforce -Lack of regulatory philosophy -High turnover	-Increase compensation -Increase chairman responsibilities -Reorganize staff -More frequent contacts w/ non-industry groups
Telecommunications : A Program for Progress (1951)	President	-FCC needs strengthening	-Increase funding -Stronger staff
Regulation of Broadcasting: A Half Century of Gov. Regulation and the Need for Further Legislative Action (1958)	Committee on Interstate and Foreign Commerce (House of Representatives)	-Arbitrary decision-making -Failure to establish standards	-Congress should formulate standards and policies -Continued Congressional study of FCC
Independent Regulatory Commissions (1960)	Committee on Interstate and Foreign Commerce (House of Representatives)	-Improper industry influence -Organizational structure is sound	-No "ex parte" contact for formal proceedings before administrative tribunal -Shorten hearing and prehearing process

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Title	Prepared for	Findings	Recs.
Report on Regulatory Agencies to the President-Elect (1960)	President	-Appointees lack qualifications -Inability to plan -Susceptible to industry capture and Congressional dominance	-Improve leadership -Increase tenure -Increase Chairman's authority
Final Report: President's Task Force on Communications Policy (1968)	President	-Lack of long-range policy planning -Lack of adequate technical staff and resources -Ad hoc responses to problems	-Increase financing -Improve personnel training
A New Regulatory Framework (1971)	President	-Overemphasis on legal skills vs. economic, social, and technical -Collegial form not adaptable to changing conditions -Lack of quality personnel	-Reduce number of commissioners from 7 to 5
Appointments to the Regulatory Agencies: The FCC and the FTC (1949-1974) (1976)	Committee on Commerce (Senate)	-Industry affects appointments -Partisanship dominates process -Controversial candidates avoided	-Greater role for Senate in appointment approval process -3 to 5 year ban on representing clients before agency where previously employed
Federal Regulation and Regulatory Reform (1976)	Committee on Interstate and Foreign Commerce (House of Representatives)	-Lack of expertise -Failure to anticipate industry developments -Lack of consistent policy -Influenced by industry	-Improve staff -Intensify Congressional oversight

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Title	Prepared for	Findings	Recs.
Study on Federal Regulation (1977)	Committee on Governmental Affairs (Senate)	-Excessive delay -Lack of clear goals and priorities	-Congressional approval of agency goals and priorities -Improve leadership -Systematic congressional review
Organizing the FCC for Greater Management and Regulatory Effectiveness (1979)	Committee on Commerce (Senate)	-Lack of long-range planning -Reluctance to formulate coherent policies -Failure to evaluate effectiveness of regulations -Procrastination	-Reduce number of commissioners from 7 to 5 -Senate confirmation of Chairman -Increase tenure -Increase number of assistants -Create managing director position
Legislative and Regulatory Actions Needed to Deal with a Changing Domestic Telecommunications Industry (1981)	Congress	-High turnover -Lack of intrabureau coordination -Lack of full-time leadership	-Establish industry analysis section
FCC Needs to Monitor a Changing International Telecommunications Market (1983)	Committee on Government Operations (House of Representatives)	-Lack of policy analysis -Lack of resources	-Establish industry analysis section
Creating a Federal Communications Commission for theInformation Age (1995)	Commission on Reinventing Government (President)	-Obsolete organizational structure -Lack of technical resources	-Restructure organization -Update technology

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UNDERSTANDING INTERNET ADOPTION DYNAMICS

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ABSTRACT

Much as been written about the emerging information society, where labor-intensive smokestack industries gradually give way to a computer-literate workforce equipped with online communication channels. The present study profiles Internet adopters in terms of social locators, media use habits, and their orientation toward adopting new technologies. The relative success of communication needs in discriminating between Internet adopters and nonadopters implies a new set of attitudinal variables to supplement demographics and technology adoption measures. Implications of study findings are discussed.

UNDERSTANDING INTERNET ADOPTION DYNAMICS

Much as been written about the emerging information society, where labor-intensive smokestack industries gradually give way to a computer-literate workforce equipped with online communication channels. By one measure, America has been in the Information Age since 1991. That was the first year when companies spent more on computing and communications--the "capital goods of the new era"--than on industrial, mining, farming, and construction machines (Stewart, 1994, p. 70)[1].

The ongoing convergence of telecommunication media thus presages a "communications" or "information" revolution that is based on collecting, storing, processing and communicating information. Nowhere will the pace of this change be faster than the telecommunication field, which now subsumes $1 trillion/year, accounting for a sixth of America's G.D.P.("Gore stumps for info superhighway bill," 1994).[2] At the center of these converging media lies the Internet, which merges the functions associated with the traditionally distinct media of telephony, TV, publishing and computing.

Nationwide interest in this emerging "information superhighway" was spurred by Executive and Legislative branch initiatives to remove regulatory barriers between voice, video and data providers, designed to facilitate a nationwide integrated digital network (I.I.T.F., 1993; Telecommunication Act

of 1996). The Internet has been heralded as everything from a workplace revolution to the greatest advance in human evolution since, perhaps, the move from single to multi-cellular body structures. Although our picture of Internet uses remains incomplete, preliminary reports indicate that by 1995, 8 million Americans were using their computer to telecommute, and over 20 million accessed the Internet each week (Lewis, 1995).

Politicians wasted little time jumping on the computer technology bandwagon. President Clinton, for instance, recently articulated a national goal that every high schooler be able to log onto the Internet before graduation. Others (Stoll, 1996) express less confidence in the Internet's staying power and social significance, questioning whether it might simply be a more technology saavy reincarnation of the CB radio fad of the 1970s.

As the information superhighway comes to fruition, we have only a crude understanding of who uses the Internet, why, and to what effect. In order to gain a better understanding of this dynamic, the present study seeks to provide a profile of Internet users in terms of social locators, media use habits, communication needs and attitudes toward technology adoption.

LITERATURE REVIEW

According to Diffusion theory, adoption of technological innovations is a function of one's innovativeness, or willingness to try new products. Thus, if we consider Internet service as an "innovation," diffusion theory can help obtain clues on those who

are relatively earlier to adopt it.

Rogers and Shoemaker (1971, p. 27) define innovativeness as "the degree to which an individual is relatively earlier in adopting an innovation than other members of his social system." Although this is but one of many competing definitions of innovativeness[3] (e.g., Midgley & Dowling, 1978), scholars have yet to fully account for the psychological dynamic driving technology adoption. For that reason, diffusion research may not provide the predictive power associated with other "theories", hence the term "diffusion framework" may be more appropriate.

In building a theory of online service use, the dearth of research on Internet adoption necessitates consideration of a wider literature addressing new media adoption. For instance, the virtual requirement of computer ownership (and operational skills) for Internet adoption renders that literature relevant to the present study.[4]

Broadly speaking, diffusion research addresses the characteristics of innovations and those who adopt them. Focusing on the former, Rogers and Shoemaker (1971) initially distinguished between continuous innovations--those representing a variation of existing channels--and others which are more discontinuous (i.e., more difficult to adopt, perhaps involving the purchase of a separate piece of hardware).[5] Building upon that framework, Krugman (1985) proposed a **dynamically discontinuous** category to reflect innovations (e.g., VCRs) that require a specific purchase and a dedicated set of user skills.

Studies of computer adoption (e.g., Lin, 1996), for instance, suggest that it's perhaps the most discontinuous of all media technologies, given the relatively high financial and skill (education) barriers associated with its adoption. Since that same study uncovered a link between computer adoption and intentions to use Internet services, than it can also be characterized as a dynamically discontinuous innovation.

Focusing on the characteristics of adopters, the diffusion framework offers corrolary perceptions of innovations, such as "ease of use" (Rogers, 1995). In fact, the very existence of a literature on "computerphobia" (e.g., Atkin, 1995b; Blumler, 1979; Lin, 1994) attests to high levels of perceived complexity associated with such information technologies as the Internet. The diffusion tradition also categorizes people in terms of social locators, adoption/uses of other technologies, and attitudes toward adoption, which will now be addressed in turn.

Social Locators.

Several metanalytic reviews of the adoption literature indicate that demography influences new media adoption and use behaviors (Atkin & LaRose, 1994a; Dutton, Rogers, & Jun, 1987a,b; Krugman, 1985), as adopters tend to be upscale, better educated, and younger than nonadopters. This has been found to be true of computer adopters as well (Dickerson & Gentry, 1983; Lin, 1996). Although only about a third of the 35% of U.S. homes with a computer use the Internet, they too tend to be younger and better educated (Sanberg, 1996). Other market profiles (e.g., O'Reilly,

1995) note that the existence of a gender gap in online service use, as two-thirds of users in one survey were men.

Since little work has directly addressed Internet adoption, it's useful to consider adoption trends for companion information services. Adopters of computer services approximate the demographic profile of general "innovators," inasmuch as they are typically younger and better educated (Garramone, Anderson, & Harris, 1986; Dutton et al, 1987; Atkin & LaRose, 1984).

As Roger's (1995) typology would predict, demographic differences between adopters and nonadopters have been leveling for more "mature" media, including cable, VCRs and other technologies that have reached the "flat" part of their diffusion curve (Reagan, 1989; LaRose & Atkin, 1992; Sparkes & Kang, 1986). Perhaps because the Internet is still in its early stages of diffusion, past work points to the upscale early adopter profile. However, Jeffres and Atkin (1996) found that income and education bear only a weak inverse relationship with interest in adopting specific Internet utilities (e.g., sending or receiving messages, ordering goods). They concluded that those applications may be less expensive substitutes for functions performed by traditional media, such as the telephone, and that communication needs were more explanatory than social categories.

Media use

The media substitution hypothesis (Krugman, 1985; Jeffres et al., 1995 Lin, 1994) suggests that the introduction of a new medium encourages a restructuring in the way consumers view

established media. Although displacement effects have been widely reported for the impact of television on radio, and that of new video media on television, the scarce literature on computer adoption provides no clear indication of the impact of online service use on traditional media channels. For instance, James, Wotring and Forrest (1995) found that the use of electronic bulletin boards did reduce time spent with television viewing, book reading and telephone use. Similarly, Vitliari et al. (1985) found that computer users spent less time with TV, books, phones and leisure.

However, focusing on functionally similar videotext services, Heikinnen and Reese (1986) discovered that newpaper reading did not discriminate in interest for potential videotext news adoption. Lin (1994) discovered a similar pattern of "noneffects" for videotext use on other media. Jeffres and Atkin (1996) likewise found the use of online services was generally unrelated to use of other media, although positive relationships emerged with TV viewing.

New media adoption

Studies reveal that the adoption of new text services is related to the adoption of other innovations (Ettema, 1984a; Lin, 1994; Jeffres & Atkin, 1996), as experience with technology encourages adoption of cable and computer media (e. g. Dutton, Rogers & Jun, 1987; LaRose & Atkin, 1988). Reagan (1987) is representative of several studies finding that adoption of a given media innovation is most powerfully related to adoption of

other such technologies; he found this to be ture of videotext, PCs, CDs and cable).

LaRose and Atkin (1992) applied Rogers' notion of technology clusters to the adoption of phone-delivered information services, noting that use of audiotext was related to functionally similar information services such as videotext and 1-900 numbers (see also Neuendorf et al., 1996; Yankee Group, 1988). Reagan et al. (1995) expanded that notion to include adoption of functionally similar technology repertiores. Such a collection might be stimulated by acquisition of a "trigger" innovation (Dozier et al., 1986), such as a computer, which encourages adoption of related technologies. Lin (1996), for instance, noted that computer adoption was related to Internet adoption intentions as well as a technology adoption index (comprised of 14 telecommunication media).

In their analysis of audience demand for popular online Jeffres and Atkin (1996) maintain that scholars should shift the focus away from technological hardware and toward communication needs, which are addressed in turn.

Communication needs

Although some of inconsistent findings on adopter profiles may be due to varying methodologies and service packages studied, it's likely that demographics are imperfect surrogates for deeper motivational variables that truly drive internet adoption. Research on technology adoption indicates that audience needs are primary determining factors. For instance, when exploring the

nature of VCR-use motives, Rubin and Bantz (1987) discovered that perceived utilities are the primary motives behind VCR-use decisions.[6] As past work (e.g., Lin, 1992) suggests, these motives all reflect a fundamental psychological element--the desire to exert control over one's content environment.

Investigating technology adoption in light of user needs, Ettema's (1984a) study of agricultural videotext found that adopters were more interested in market updates than news. Market studies (e. g. Mayer, 1986) suggest that users prefer games, news and sports to banking, shopping and general interest services. Ducey (1986) and Lin (1994) uncovered interest in a somewhat wider scope of videotext services (ranging from voting to energy management and games). Most recently, Lin's (1996) study of Internet adoption uncovered a "likely adopter" profile involving young, computer-literate innovators who--despite not yet adopting owing to financial limitations--that will likely become adopters when their earnings increase. Other work suggests that audience needs or media use patterns are much more powerful than demographics in explaining the adoption of cable (LaRose & Atkin, 1988, 1991; Jacobs, 1995), videotext (Ettema, 1984; Lin, 1994; Reagan, 1987, 1989), audiotext (Atkin, 1995a; LaRose & Atkin, 1992; Neuendorf et al., 1996; O'Keefe & Sulanowski, 1992), computers (Perse & Courtwright, 1993; Lin, 1996) and the Internet (James, Wotring, & Harris, 1995)

Recently, Jeffres and Atkin (1996) argued that the Internet represents a merger of opportunities for interpersonal (or point-

to-point) communication, group communication, organizational communication and mass communication. They conceptualized communication needs to include both message sending and receiving. We propose to include not only the usual demographic variables but also measures of these needs, as well as reports of communication behaviors in various contexts, including mass and interpersonal communication.

THEORETICAL ASSUMPTIONS

This paper extends a previous study on Internet technology adoption, in the context of broader domain of innovation and communication needs fulfilled by technology use. Studies of computer adoption, for instance, address the compatibility between innovations and the existing values, past experiences and needs of potential users (Atkin, 1995b; Blumler, 1980; Dickerson & Gentry, 1983). In conceptual terms, it's useful to pattern our framework after theoretical linkages drawn from adoption and media substitution theory. As past work demonstrates a limited utility with traditional gratifications measures for Internet study--which are largely limited to surveillance and social interaction (Lin, 1996)--it's useful to consider a set of consumer needs other than those associated with conventional media.

Drawing from parallel work on new media adoption, we would expect that needs related to interpersonal communication--such the need to express oneself to everyone online--would be more strongly related to Internet adoption than demographics as the

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innovation diffuses into more and more households. At earlier stages, social background variables may be more significant inhibitors or initiators. Thus, we hypothesize that all three of set of variables will be related to Internet access:

H1: Internet access will be related to social categories.

H2: Internet access will be related to communication needs.

H3: Internet access will be related to media use.

If there is to be a role for social locators in predicting Internet adoption, it would likely involve attributes related to the chief barriers to Internet adoption--education and income. Assuming that adoption of such online services is resource-driven. Thus, we would expect better educated and higher income households more likely to have access to Internet technology.

It's difficult to discern a clear direction for media use influences on Internet adoption, given contradictory findings suggesting displacement (James, Wotring, & Harris), orthogonality (Reagan, 1989b) or even a positive relationship with television (Jeffres & Atkin, 1996). Given that the most popular Web services gernerally offer content distinctive from that of the mass media--while such conventional offerings as online publishing have struggled (Sanberg, 1996)--we expect that media use variables will not be related to Internet adoption here.

This displacement dynamic should not apply to new media adoption, either, as we expect Internet adoption to be related to use of other telecommunication innovations. This should be especially true for media that fall within the same technology

cluster or are otherwise functionally similar to the Internet, such as the computer (Dutton, et. al., 1987; LaRose & Atkin, 1988, 1992; Reagan, 1987, 1989). In particular,

> **H4**: Access to Internet service will be related to use of functionally similar information media (i.e. computers), while use of conventional entertainment media (TV, film) should be unrelated.

METHODS

Study data are based on a telephone survey involving a regional probability sample which yielded 377 respondents in a metropolitan area of the Midwest. Data were collected during the Spring of 1996, using traditional random-digit dialing techniques and a CATI system.

The sample had a median annual household income of $30,000 to $40,000. Half (50.4%) were married, 22.3% divorced or widowed, 1.6% separated, and the remainder had never been married. In terms of highest educational attainment, 11.2% had an advanced degree, 28.3% had an undergraduate degree, 26.7% had some college experience, 24.8% were high school graduates and 9.1% had less education than that. The median respondent age was 41 years. Otherwise, the sample composition did not differ significantly from the national population, except in gender (48% male) and ethnicity (U.S. Bureau of the Census, 1993). African-Americans (18% of our sample) were slightly overrepresented, while Hispanics (1.7% of respondents) were underrepresented.[7]

With regard to operationalizations, respondents were asked how much they agreed or disagreed with a variety of statements in a general public opinion survey. They were told to "respond on a

scale of 0 to 10, where 0 means you strongly disagree, 10 means you strongly agree, and 5 is neutral." Included were items measuring a series of variables measuring communication needs, including the traditional role of the mass media audience member as a receiver of messages, the role of sending messages using new technologies, and in using interactive technologies for consumer goals. The items for specific variables were interspersed with those tapping other variables to avoid a response pattern. Items for each scale were coded so they were all in the same direction. The items are:

Communication Need Across Interpersonal Contexts (1) (CMU20): "I value my solitude and welcome the chance to be alone and not have to talk with other people."

(2) (CMU19): "I hate being alone and sometimes just leave the house to go somewhere so I won't be lonely and can talk with people."

Communication with Friends, Associates (CMU15). "I spend a lot of time talking with friends and associates about things I find interesting, like hobbies, personal interests, or current events."

Communication Need in Group/Club Context (CMU16). "I think organizations and clubs are a good way to find people you can talk with about similar interests."

Communication Need in Neighborhood Context (CMU18). "I wish I had a chance to spend more time talking with other people in my neighborhood."

Traditional Media Audience Role (CMU13): "Even if it costs more, I'd like to have a cable system that had 500 channels so there was always something that fit my personal tastes."

Message Sender Role Using New Technology (CMU11): "If there was some way I could send a message to everyone in [the area] using mail by telephone or some computer hookup, I'd do it regularly."

Need to Send Messages to Large Audiences (the characteristic advantage of mass media) **(1)** (CMU14). "Sometimes I wish I were a columnist for the (metro daily) and could tell everybody what I thought about what's going on today.

(2) (CMU17): "I often feel the need to express myself and wish I had a chance to be a writer or reporter." Consumer Role: "I already have enough to watch on TV and don't need cable TV to pay bills, do my banking, order airline tickets or do other things that I now do in person or by mail."

Respondents' relationship with technology is important because of the apprehension often associated with the use of computers and the importance of keyboarding and associated skills in using communication technologies effectively. Two measures were used to tap respondents' **relationship with technology**:

(CMU12): "I consider myself a modern person who is usually up-to-date on new technologies."

(CMU10): "I enjoy trying out new technologies and like to introduce them to my friends."

We used a series of additional measures to tap people's communication activity, including both mass and interpersonal, as well as their orientations toward that activity. We operationalized media exposure using commonly-accepted measures which asked people for: the number of hours they spent watching TV and listening to the radio yesterday, the number of days last week they read a newspaper and the amount of time usually spent reading a paper, the number of books read in the past six months, the number of movies seen in a theater in the past six months, the number of magazines read regularly, and whether one subscribed to cable television. In addition, we used the following measures of communication and orientations in other

contexts:

Interpersonal Communication at Work (CMU2). "I seem to spend much of my time at work talking with customers, clients or coworkers."

Family Communication (CMU3). "IMany days I don't talk with anyone outside my family."

Communication with Strangers in Public Places (CMU4). "I enjoy striking up conversations with people I don't know when I'm waiting in line, sitting next to someone in a waiting room or while having a cup of coffee somewhere."

Homopholous Communication (CMU5). "I feel more comfortable talking with people like myself than with people who are different."

Community/Neighborhood Communication (CMU6). "The people I see most often live in the same part of town I do."

Mediated Neighborhood Communication/Receiver Role (CMU8). "I wish there was more news in the media about my neighborhood and less about Cleveland or the metro area in general."

Mediated National vs. Local Communication/Receiver Role (CMU7). "I enjoy reading about what's going on in the country and around the world more than news about the local area."

Mediated News vs. Entertainment Communication/Receiver Role (CMU9). "I enjoy reading the entertainment, sports and features in the daily newspaper more than the general news sections."

Social categories were measured using the traditional items. The dependent measure--Internet access--was measured by asking respondents whether they had access to the Internet at home or at work.

RESULTS

Results of the discriminant analysis are reported in Table 1. Discriminant analysis was selected as the appropriate method

because our dependent measure is a dichotomous variable: Internet access--yes or no.

A stepwise method was used, with variables entered in the following order: 1) social categories; 2) communication needs; 3) reports of communication activity and orientations; 4) computer access and measures of respondents' relationship with technology, and 5) media use. At each step variables may be removed from the equation as additional variables are entered; the variable that minimizes the overall Wilks' lambda is selected for inclusion. The discriminant method forces all the variables in first and then removes variables to maximize the overall partial F ratio.

The overall discriminant function is significant, with 79% of cases correctly classified. The canonical correlation for the equation--describing the overall relationship between the canonical discriminant function and all of the independent variables as a group--is .62 (Wilks' lambda is .621, chi-square value is 141.0, df=21, p <.0000). The discrimination process ends when the F level or tolerance is insufficient for further computation; in our discriminant, the process stopped after two of the media use variables were included from the last block.

In Table 1 are the discriminant coefficients, which bear some interpretive similarities to beta weights in multiple regression analysis; while a positive value implies a predictive relationship, a negative value implies an inverse relationship). Also in Table 1 are the pooled within-groups correlations between discriminating variables and the canonical discriminant function,

which show the importance of the individual variables to the discriminating function differentiating between those with and without Internet access.

The findings suggest that education is predictive of Internet adoption, as is income, while age is an inverse predictor (see Table 1). These three social locators related to Internet adoption are those most commonly identified in past diffusion work, providing mixed support for Hypothesis 1.

Focusing on communication needs, we see that all nine of the measures were significant discriminators. The most important was valuing one's solitude (CMU 20). As the means show, those with no Internet access are more likely to say they value their solitude and want to be alone, while those with Internet access are less likely to agree with this statement. Overall, the results provide some support for Hypothesis 2.

With regard to communication activities and orientations, the strongest discriminator was an interest in entertainment and soft features rather than the news (CMU9). As the means in Table 1 show, those who say they are more interested in such content are more likely to not have internet access, while those who disagree--those more interested in the news than features and entertainment--are more likely to have Internet access.

As expected, computer access is a powerful predictor of Internet access (*coeff.*= .50), providing support for Hypothesis 4. Also, those who consider themselves up-to-date on technologies (CMU12) and who like to try out new technologies (CMU10)--almost

a definition of an early innovator--are more likely to have Internet access.

Finally, in terms of media use, frequency of readership of the daily paper and the number of hours one listened to the radio yesterday were discriminators. As the means show, those who read the paper more frequently are more likely to have Internet access, while those without such access are more likely to spend more time listening to the radio. However, only two of seven media use measures were entered into the discrimination before the process terminated. A second discriminant analysis was conducted, entering all of the variables at once. Results are in Table 2. Looking specifically at the media use variables, we see that the two measures of television viewing are significant discriminators; those with Internet access tend to exhibit lower TV viewing than those without access. Similar results occur for radio listening, which is heavier among those without access. However, the reverse is found for the print media, videos and films, where Internet access is associated with heaver viewing and reading. This provides little support for Hypothesis 3 and a suggestion of substitution in the case of TV.

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DISCUSSION

This study discriminated between Internet adopters and nonadopters based on social locators, communication needs, media use habits and relationships with technology. Findings generally confirm the expected relationships involving social locators derived from past work.

Given that Internet adopters can be statistically differentiated from nonadopters across a broad range of measures, our results are consistent with expectations derived from the diffusion tradition. We see a limited range of demographic and media-use variables related to Internet adoption. The young, upscale adopter profile observed here parallels that noted in studies of computer adoption (e.g., Lin, 1996; Mitchell, 1994). Taken together, these findings provide a portrait of a medium in its early stages of diffusion. Perhaps owing to high barriers to adoption--namely, a substantial investment in a powerful (100Mhz+) computer processor and monthly subscription fees over $20--the Internet has yet to reach the "household necessity" stage of its diffusion. Even so, the middling magnitude of those relationships suggests these differences may be leveling.

The rapidly changing media environment thus poses questions about the degree to which audiences shift away from conventional media to wider range of competing media. This media substitution hypothesis now predicts that the Internet and other new media will displace conventional media (e. g. broadcast TV, newspapers) because they are able to deliver services, content and

entertainment more efficiently, attractively or conveniently (LaRose & Atkin, 1991). OUr findings support this for general TV viewing but not the other media.

As for attitudinal measures, need for innovativeness emerged as one of the stronger predictors of adoption, as we would expect. This finding hence empirically validates the notion that need for innovativeness--the psychological roots for an individual's degree of innovativeness--is, indeed an important predictor for the adoption of innovations.

The relationships involving communication variables are also telling, and point to the ways in which users view the computer as a partner with whom they can interact. This might be exemplified by the situation where users converse with anonymous others, or match wits with an online game. In that regard, game playing or messaging activities might prompt users to regard the Internet computer hookup as an "interpersonal" communication as well as a mass medium or information utility.

Such communication and information utilities are likely to remain the raison d'etre for Internet adoption, given the limited relationships with entertainment media noted here. Since the industry faces limitations in producing and delivering entertainment and advertising content--and limited brand identification among providers-- it's not likely that the Internet will emerge as a functional substitute for entertainment media in the near future.

Given the increasingly blurred distinctions between various

telecommunication terminals, though, it is difficult to locate any truly independent technologies. For that reason, researchers should continue to examine possible interrelationships among such technologies, and take care to note areas of overlap in actual usage applications. Further work is needed to determine multiple indicators for these dimensions, beyond the limited number of attitudinal and media use items used in this study.

CONCLUSION

On balance, the level of Internet use uncovered here--encompassing half of our sample--provides a strong complement to robust levels of interest shown in particular service applications. This profile of respondent interest contradicts popular reports about online service problems, such as the still birth of videotext (Booker, 1988) or America Online's more recent problems finding adequate network capacity. Perhaps reporters are more adept at covering (and dramatizing) discrete events--such as service failures--and less capable of covering evolutionary processes.

The changing adopter profile associated various stages of Internet diffusion poses an interesting topic for future research. But, the implications for the high adoption rate for the Internet uncovered here are crucial, given that it represents the most likely gateway for wide ranging messaging, entertainment and information applications driving the economy in the coming century (Stewart, 1991).

Although early failures were widely publicized (e.g.,

Booker, 1988)--and even heralded as the death of online computing--the continuing growth of the Net provides contrary evidence to these naysayers. As this demand continues to grow, helping grease the wheels of the larger information economy, it will be critical to define user profiles for particular online utilities (e.g. home banking).

In sum, this study examined the manner in which demographics--as well as technology adoption patterns and beliefs--influence Internet adoption of information services. Results generally confirm our expectation that attitudinal variables, particularly those addressing communication needs served by online technology, are more explanatory than demographics.

As Lin (1996) notes, it remains to be seen whether popular entertainment and text applications represent "trigger" innovations which stimulate the adoption of more advanced information services. The Internet does, however, represent something of a "unified field" for media--consolidating voice, video and data functions--about which programmers have dreamed for years. For that reason, it may also represent a "death-star" for potential competitors who are unable to secure a lane along that information superhighway. But, before we mix too many more metaphors, it will be useful for future research to further explore the psychological motivations driving Internet adoption.

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Table 1

Discriminant Analysis for Internet Access

Variable	Means Internet Access	Means No Internet Access	Standardized Canonical Disc. Function Coeff.	Pooled Corr. w/Fun.
Social Categories:				
Education	4.58	3.73	.596	-.493
Age	35.95	46.94	.596	.460
Income	4.74	3.99	-.021	-.260
[NHouse, Gender]				
Communication Needs:				
CMU20	5.72	5.85	-.194	.030
CMU19	3.78	4.13	.005	.070
CMU15	7.40	7.30	.096	-.028
CMU16	7.20	7.19	.036	-.002
CMU18	5.26	5.47	.073	.055
CMU13	5.11	5.04	.090	-.012
CMU11	5.79	5.07	-.060	-.146
CMU14	5.35	6.02	.190	.130
CMU17	5.04	5.37	.029	.066
Com. Activity, Orientations				
CMU6	4.87	6.07	.064	.238
CMU5	4.48	5.33	.020	.182
CMU9	4.83	5.47	.150	.136
CMU7	5.47	5.30	-.063	-.040
[CMU2,CMU3,CMU4,CMU8]				
Computer Access/Tech.Relations				
Computer access	1.23	1.66	.497	.618
CMU12	7.41	6.28	-.208	-.299
CMU10	7.39	5.93	-.281	-.358
Media Use:				
Read Daily Paper	4.93	4.47	-.347	-.114
Radio Listening	2.18	2.44	.103	.060
[TV viewing, mags, books, videos, films, cable]				

Note: In the third column are the standardized canonical discriminant function coefficients and in the fourth column are the pooled within-groups correlations between discriminating variables and the canonical discriminant function.

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Table 2

Discriminant Analysis for Internet Access/All Variables Entered

Variable	Means: Internet Access	Means: No Internet Access	Standardized Canonical Disc. Function Coeff.	Pooled Corr. w/Fun.
Computer Access	1.23	1.66	.515	.603
Education	4.58	3.73	-.295	-.481
Age	35.95	46.94	.511	.448
CMU10	7.39	5.93	-.284	-.349
TVUsual	2.57	3.75	-.003	.329
CMU12	7.41	6.28	-.227	-.291
Income	4.74	3.99	-.004	-.254
TVYesterday	2.55	3.60	.030	.244
Films	1.54	.98	-.127	-.236
CMU6	4.87	6.07	.066	.232
CMU3	2.15	3.20	.058	.198
Videos	3.07	2.32	-.083	-.188
CMU5	4.48	5.33	-.005	.178
No.in House	3.07	2.70	.074	-.152
CMU11	5.79	5.07	-.025	-.142
CMU8	4.25	4.83	.014	.133
CMU9	4.83	5.47	.159	.132
CMU14	5.35	6.02	.164	.127
Mags	2.99	2.59	.038	-.126
Paper	4.93	4.47	-.338	-.111
Books	3.45	3.03	.091	-.099
CMU2	7.09	6.54	-.062	-.096
CMU19	3.78	4.13	.039	.068
CMU17	5.04	5.37	.013	.064
Radio	2.18	2.44	.117	.058
Cable Sub.	1.24	1.20	-.077	-.056
CMU18	5.26	5.47	.052	.054
CMU7	5.47	5.30	-.072	-.039
CMU20	5.72	5.85	-.188	.029
CMU15	7.40	7.30	.084	-.028
CMU4	5.90	5.80	.055	-.020
CMU1	3.42	3.50	.010	.017
CMU13	5.11	5.04	.044	-.012
Gender	1.50	1.51	-.139	.011
CMU16	7.20	7.20	.049	-.002

Note: The variables are ordered by the size of their correlation with the canonical discriminant function. The canonical correlation is .625; the Wilks' Lambda is .609, with a chi-square of 143.35 (df=35; p<.0000); 78.6% of the cases were correctly categorized.

ENDNOTES

1. According to some estimates, over half of American employees today are part of the "knowledge class" in an "information age" (Porat, 1977). In this emerging post-industrial society, communication is increasingly replacing transportation as the major means of connecting people. The energy core of this new social framework involves new technologies of communication (Bell, 1976; 1980).

2. In fact, the President's Council of Economic advisors recently noted that job offerings in telecommunication will increase from 3.5 million in 1994 to 4.5 - 5.5 million by 2003, as economic activity in that area doubles

3. Those authors (1978, p. 236) define innovativeness as the degree to which an individual is receptive to new ideas and makes innovation decisions independently of the communicated experience of others

4.It should be noted that non-computer applications for the Internet, such as Sony's WEB-TV, may alter future distribution patterns for the Internet. They account for only a small fraction of the marketplace at present, however (Sanberg, 1996).

5.They also discuss an intermediate category, dynamically continuous innovations.

6. Such utilities include time-shifting, convenience, acquisition of tapes featuring special topics, opportunities to create social events or home entertainment with friends or families.

7. In profiling media use, the average respondent spent 3 hours a day with TV and 2.3 hours with radio while having read a newspaper 5 days during the last week. Looking at usage patterns during the previous six months, the average respondent read 3.3 books, saw 6.8 movies and regularly read 2.7 magazines. Over three-quarters (76.3%) of respondents subscribed to cable.

Online Newsgathering Trends, 1994-96

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Online Newsgathering Trends in 1994-96

ABSTRACT

This paper focuses on online newsgathering at U.S. daily newspapers during 1994 to 1996. Findings of three national surveys of newspapers with daily circulations of at least 20,000 are reported. Overall use has increased over the three-year period. Significant growth during the period has been in use of the World Wide Web as a news reporting resource. Other resources gaining use included America Online, DataTimes, PACER, CompuServe, and Westlaw. While the number of newspapers using online services increased, their individual levels of use also grew.

Online Newsgathering Trends in 1994-96

Journalists use online computer information for a wide range of purposes. Research has shown that they use the Internet's World Wide Web and commercial online services to enhance their newsgathering (Garrison, 1995a; Reddick & King, 1997; Ross & Middleberg, 1997). Among the most-cited uses are finding people and news story sources, locating experts for stories, checking clips of other news organizations while preparing stories, conducting background research about businesses and individuals, identifying new story ideas, and locating both public and private information stored in digital form. These online tools save time, save money, are more thorough, and can link information in widely diverse locations (Ross & Middleberg, 1997; Garrison, 1996b; Garrison, 1996c; Garrison, 1996d; Anon, 1996a; Reddick & King, 1997; Paul, 1996; Grossman, 1994; Anon, 1996b). The technology is not as threatening as might be suspected; some scholars believe content producers, such as journalists, will readily adapt, even thrive, in the digital world (Johnson, 1996).

Technological change is extraordinarily rapid today. "[N]o change has come about as fast as what we are calling "new" media – online services, especially on the World Wide Web. Why? The technology is ripe, economic barriers to entry are low, and there are almost no regulatory hurdles, either. Thus, new media continues to expand, although powered weakly by anemic advertising and limited direct user fees, because it can," observed Ross and Middleberg (1997, n.p.).

Computer-based online technology, among other types, has begun to change the role of many news organizations, such as traditional newspapers, in their communities.

Use of online resources is not just a one-way process. Because of their increased use of online information-gathering resources and databases, many newspapers regard themselves as "information stores" for citizens in their regions in 1997. Using their computer systems and telephone-based communications, these companies are selling information in some of the same ways it is gathered—by telephone connection, by computer, and by imaging hardware (Anon., 1996a). Some experts have called this new data-oriented facility an "information recycling center" (Johnson, 1995).

Reddick and King (1995) have argued that online communication networks are the natural progression of technological evolution in newsrooms— following the printing press, telegraph, telephone, and television. "As with the new technologies of the past, the Internet and other online information networks will profoundly affect the art and craft of journalism," Reddick and King observed (p. v).

The dual approach to using computers in newsgathering has become commonly known as computer-assisted reporting (CAR). It includes (a) online-based newsgathering that uses both specialized commercial services and Internet-based services, such as the World Wide Web (Garrison, 1995b), and (b) database-oriented analysis using existing and originally created databases from both the public and private sectors (Garrison, 1995a; Houston, 1996). Commercial database services are often credited for starting the current information revolution (Paul, 1996). Certainly, the development of the Internet, with its World Wide Web, has fueled it.

Online strategies have been increasingly adopted by journalists as subjects have dictated (Garrison, 1996a; Garrison, 1996e; DeFleur, 1997) and after CAR's journalistic

birth in newspaper and news magazine newsrooms, its use has spread slowly into television newsrooms as well (Hall, 1996).

Even the online services themselves are evolving at a fast pace (Paul, 1996). With the dominant influence of the Internet's World Wide Web in the last half of this decade and the expectation of that to continue into the next decade, access to electronic information is not what it once was for journalists and other online users. The industry is incredibly fluid and re-inventing itself. Access is easier than ever; it is also more widespread.

Online resources are among the most basic CAR tools (Houston, 1996). The leading types of online services are the World Wide Web, Usenet Newsgroups, and electronic mail; general commercial offerings, such as America Online and CompuServe, database library "malls," such as Nexis / Lexis, Dialog, and Dow Jones; government information services, such as PACER and FedWorld; and private specialty services that offer enhanced government data, such as Westlaw and Database Technologies' Autotrack Plus (Garrison, 1996e).

The type and number of electronic resources available to news organizations has grown in recent years. Not only has the number of news sources in electronic form gone up, the number of businesses distributing information in database libraries has increased as well. The effect, one newspaper recently recognized, "puts more information in the hands of readers" (Anon., 1996, p. NB4).

Therefore, it seems valuable to study the use of online resources in newsgathering. This paper reports research into use patterns by journalists of commercial services as well as the Internet services over a three-year period. The analysis hopes to determine trends in

selection and use of online resources and levels of use and the roles of individuals in the newsroom who are using them.

RESEARCH QUESTIONS AND FOCUS

This analysis focuses on use of commercial online services and the non-commercial Internet as newsgathering tools of daily news stories and special investigative projects that involved CAR from 1994 to 1996. Generally, this paper seeks to answer these research questions:

1. *How many newspapers use online services? What are reasons for not using them?*
2. *What are frequency use levels for online services in news reporting?*
3. *What are the most popular online resources? Which resources have grown the most? The least?*
4. *Who conducts online news research in newsrooms?*

THE STUDY METHOD

An on-going national project studying the development and use of CAR has been underway since 1993. This paper reports findings involving use of online services from three national surveys:

- In late December 1993, data were collected with a mailing to 514 Sunday and daily newspapers across the United States. One follow-up mailing was sent in February 1994

- In late December 1994, data collection began with a mailing to 510 Sunday and daily newspapers. Two follow-up mailings were sent. The first follow-up was mailed in early February 1995 and the second was sent in mid March 1995.
- In January 1996, the third survey was conducted with a mailing to 510 daily newspapers. Two follow up mailings were used to increase participation.

A circulation minimum of 20,000 on Sundays was required for inclusion in the population in each survey. Since this study involved surveying three populations, significance tests are not reported. Circulation figures were obtained from the latest editions of the *Editor & Publisher International Year Book* (Anderson, 1994; Anderson, 1995; Anderson, 1996).

Editors were asked either to complete the questionnaire themselves or to forward it to the person in charge of online news research and CAR. In some cases, two or three persons completed portions of the questionnaires. The instruments were developed from discussions and interviews during the Investigative Reporters and Editors-National Institute for Computer-Assisted Reporting conferences at Raleigh, N.C., in 1993, at San Jose, Calif., in 1994, and at Cleveland in 1995. The instruments consisted of four sets of questions, including institutional and personal information, CAR tools, online news research, and field reporting use of computers. Data were processed using the Statistical Package for the Social Sciences for Windows, Version 6.1.3 (Norušis, 1995).

FINDINGS

In 1994, a total of 208 responses were received, a rate of 41 percent. In 1995, 287 responses were received, a rate of 56 percent. In 1996, 233 responses were received, a

rate of 45 percent. Table 1 shows overall response demographics. Respondents in each of the three groups were typically managing editors, CAR supervisors or directors, or news researchers or reference supervisors. In some cases, several individuals contributed to completion of a single questionnaire representing their newspaper.

How many newspapers use online services? What are reasons for not using them?

There has been considerable growth in use of online tools in newsgathering in the past three years. As shown in Table 2, barely more than half of newspapers responding used online resources in 1994. This grew to 64 percent in 1995 and to 81 percent in 1996, a cumulative increase of 24 percent.

Among newspapers not using online services, the most-cited reason for non-use was lack of hardware and software to go online. Data in Table 3 show this reason was cited by 28 percent in 1994, 23 percent in 1995, and 32 percent in 1996. A growing number of respondents offered unclear "just starting" or "not yet online" explanations. A more concrete explanation, aside from offering hardware and software problems, was money or budgetary reasons, but this reason was cited less in the past two years than in 1994, dropping from 26 percent to 13 percent in 1995 and then rising slightly to 16 percent in 1996.

What are frequency use levels for online services in news reporting?

Frequency of use of online services continued to grow, data in Table 4 show. While the basic number of newspapers using any type of online services for any news-related reason increased, so did the amount of use of those online resources. The number

of newspapers using their online resources on a daily basis increased slightly from 27 percent in 1994 to 29 percent in 1995, but jumped to 37 percent in 1996. Similar increases were observed in each of the other use level categories, with weekly or more-often use growing to 26 percent in 1996 and monthly or more-often up to 13 percent in 1996. The number of missing responses or "never used" responses declined by 19 percent from 1994 to 1996.

What are the most popular online resources? Which resources have grown the most? The least?

Whenever discussion of online services takes place, there is usually interest in what services are being used in newsrooms across the country. The Internet, particularly the World Wide Web, has become the online resource of choice at U.S. daily newspapers. Much less widely used in 1994 at 25 percent, the "Web" was used by 45 percent in 1995 and 67 percent in 1996, as shown in Table 5. This reflects a major jump in use of 42 percent over the three years.

While it has not grown as fast as the Internet, the consumer-based America Online service has also experienced rapid growth as a resource in newsrooms since 1994. Used by just 17 percent of newspapers in 1994, AOL grew faster than any other service from 1994 to 1995 at 38 percent use. Its growth at newspapers slowed from 1995 to 1996, but it remained the second-most popular online service at 47 percent in 1996.

DataTimes, a full-text newspaper and other periodicals service, grew about 10 percent from 1994 to 1996, the third-best increase, to a current use level of 25 percent. Other services grew much less over the three years, usually from one to four percent. The

most widely used services, those used by one-fourth or more of respondents in 1996, were:

- Internet, 67 percent
- America Online, 47 percent
- CompuServe, 42 percent
- Government bulletin board systems, 35 percent
- Nexis / Lexis, 29 percent
- Local government information and databases online, 28 percent
- DataTimes, 25 percent

Who conducts online news research in newsrooms?

For several years, there has been a transition in news research occurring in some daily newspaper newsrooms. At one time, online research was exclusively the province of news researchers in the news department library. Gradually, more and more non-news researchers have begun to handle online research. Data in Table 6 show an increase in what could be labeled "do-it-yourself" news research. Reporters doing their own online research grew eight percent from 24 percent in 1995 to 32 percent in 1996. Librarians and news researchers doing online research dropped about eight percent from 25 percent in 1995 to 17 percent in 1996.

CONCLUSIONS

The Internet, with its World Wide Web, has consumed much of the attention of those involved in mass communication in this decade. The extremely rapid development

and growth of the World Wide Web has not left the news business untouched. The data collected in the three surveys reported in this paper indicate that newspapers are not only considering the Internet and World Wide Web as distribution tools for the future, but also use them as information gathering tools for development of content.

Clearly, newspapers are not depending solely on the World Wide Web or other Internet resources. While much of the focus is clearly on global communication using the Internet, this is also facilitated through other online tools. Many of these are highly specialized and serve the needs of journalists as information gatherers. These tools have also experienced growth in use in the past three years, this study has shown. Ross and Middleberg, who studied the uses of online resources by looking at how individual journalists use them, have also found rapid and broad adoption. "Journalists have clearly embraced online services," they (1997) concluded.

Journalists have learned that these online tools are time savers, are generally more thorough, and extend the reach of their reporting skills. While costly at times, the expenses are efficient when the expense of other, more conventional, procedures are considered.

There is probably a competitive element involved in the use of online services also. While only large dailies used these services several years ago, the use has spread to newspapers of all sizes. Affordability, simplicity in use, and widening access avenues have encouraged it, but competition and keeping up with what other news organizations are doing seem to be the most significant forces at work. There is no empirical evidence offered to back that point, but anecdotal evidence, such as discussions at recent professional conferences, various comments and threads on Internet distribution lists

devoted to news research and CAR, and informal personal discussions, indicates it is a strong possible explanation.

The World Wide Web is not just a new distribution vehicle for journalists. It has become a highly valuable resource for newsgathering and, in time, the Web, electronic mail, and other Internet tools most often used will take their place at all newspapers alongside other time-tested resources, such as reference books, telephones, and fax machines. As early trends reported in this paper suggest, the adoption process is evolving and more and more newspapers are using these tools. It is only a matter of time and reduced costs until even the smallest newspapers will use online tools, just as they use telephone-based conventions, such as voice and fax communication.

Despite its useful findings, this analysis falls short in several respects and deeper probing into the subject matter may be needed. It would be helpful to analyze data by looking at characteristics of the newspapers, such as size, region, available CAR resources, computer literacy levels of journalists involved, and availability of data, for instance. There were other weaknesses. This study did not include wire services becoming increasingly involved in CAR, nor did it look at specialty publications, such as news magazines, that were readily using CAR in their investigative reporting. It would also be valuable to look at broadcast news media since an increasing number of local news organizations are producing investigative projects that use numerous CAR tools. The study was being repeated in early 1997 with increased focus on newsroom uses of the World Wide Web. This new direction is directly a result of the findings reported in this paper.

TABLE 1: Respondent Demographics, 1994-96

Category	1994	1995	1996
Circulation mean	121,361	113,735	105,241
Circulation by region			
East	18%	18%	22%
South	36	33	34
Midwest	28	27	26
West	17	22	19
Respondent CAR role			
Editor, supervisor	56%	20%	40%
CAR supervisor	6	27	21
Investigations, projects	9	9	6
Other	29	44	33

TABLE 2: Use of Online Services, 1994-96

Uses online tools in reporting	1994		1995		1996		Percentage Change 1994-96
Yes	119	57.2%	183	63.8%	188	80.7%	+23.5%
No	83	39.9	96	33.4	45	19.3	-20.6
Missing	6	2.9	8	2.8	0	0.0	-2.9
Totals	208	100.0%	287	100.0%	233	100.0%	

TABLE 3: Reasons for Not Using Online Services, 1995-96

Reason	1994		1995		1996		Percentage Change 1994-96
Just starting	6	10.3%	15	24.2%	6	19.4%	+9.1
Not yet online	8	13.8	14	22.6	6	19.4	+5.6
No hardware/software	16	27.6	14	22.6	10	32.3	+4.7%
Dragging feet	0	0.0	1	1.6	0	0.0	0.0
No expertise	5	8.6	4	6.5	2	6.5	-2.1
No interest	4	6.9	1	1.6	1	3.2	-3.7
Not high priority	4	6.9	5	8.1	1	3.2	-6.7
Money or budget	15	25.9	8	12.9	5	16.1	-9.8
Totals	58	100.0%	62	100.1%	31	100.1%	

n=208, missing observations = 150 in 1994; n = 287, missing observations = 225 in 1995; n = 233, missing observations = 202 in 1996.

TABLE 4: Frequency of Use of Online Services, 1994-96

Frequency	1994		1995		1996		Percentage Change 1994-96
Daily, more often	57	27.4%	83	28.9%	86	36.9%	+9.5%
Weekly or more often	23	12.1	63	22.0	60	25.8	+13.7
Monthly or more often	8	3.6	28	9.8	30	12.9	+9.3
Less than monthly	3	1.4	16	5.8	10	4.3	+2.9
Other	36	17.3	----	----	----	----	-----
Missing / never used	81	38.9	97	33.8	47	20.2	-18.7
Totals	208	100.7%	287	100.3%	233	100.1%	

TABLE 5: Use of Online Services, 1994-96

Frequency	1994		1995		1996		Percentage Change 1994-96
Internet	52	25.0%	128	44.6%	155	66.5%	+41.5%
America Online	36	17.3	109	38.0	110	47.2	+29.9
DataTimes	31	14.9	77	26.8	57	24.5	+9.6
PACER	---	-----	56	19.5	54	23.2	+3.7*
CompuServe	79	38.0	113	39.4	97	41.6	+3.6
Westlaw	0	0.0	5	1.7	8	3.4	+3.4
Datalink	2	1.0	3	1.0	5	2.1	+1.1
Local government online	---	-----	78	27.2	66	28.3	+1.1*
Information America	---	-----	11	3.8	11	4.7	+0.9*
FedWorld	---	-----	57	19.9	48	20.6	+0.7*
Interchange	---	-----	3	1.0	4	1.7	+0.7*
Lexis / Nexis	60	28.8	81	28.2	67	28.8	0.0
Prodigy	25	12.0	46	16.0	27	11.6	-0.4
GEnie	4	1.9	2	0.7	2	0.9	-1.0
Burrelle's Broadcast	8	3.8	9	3.1	6	2.6	-1.2
Newsnet	8	3.8	14	4.9	6	2.6	-1.2
Credit services	13	6.3	16	5.6	9	3.9	-2.4
Dow Jones News	34	16.3	35	12.2	31	13.3	-3.0
Government BBSs	81	38.9	90	31.4	83	35.6	-3.3
Commercial BBSs	31	14.9	46	16.0	19	8.2	-6.7
Dialog/Knowledge Index	55	26.4	64	22.3	43	18.5	-7.9
Private BBSs	43	20.7	52	18.1	29	12.4	-8.3
Delphi	23	11.1	30	10.5	6	2.6	-8.5
Microsoft Network	---	----	---	----	1	0.4	-----

n = 208 in 1994; n = 287 in 1995; n =233 in 1996.

* Percent change from 1995 to 1996 only.

TABLE 6: Individuals Conducting Online Searches, 1995-96

Position/title of person	1995		1996		Percentage Change 1995-96
Reporter	52	23.5%	74	31.8%	+8.3
Librarian/researcher	56	25.3	40	17.2	-8.1
Anyone in newsroom	50	22.6	52	22.3	-0.3
None	32	14.5	49	21.0	+6.5
Other	23	10.4	8	3.4	-7.0
Editor	8	3.6	10	4.3	+0.7
Totals	221	99.9%	233.	100.0%	

n = 287, missing observations = 66; n = 233, missing observations = 0.

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Top 3 Faculty Paper

DOES WEB ADVERTISING WORK?

Memory for Print vs. Online Media

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Is memory for an advertisement related to the medium in which the ad was viewed? A between-subjects experiment (N = 48) was designed to answer this question. One-half of the subjects was exposed to a print newspaper front-page with two news stories and one advertisement whereas the other half was exposed to the online version of the same content. Results showed that print subjects remembered significantly more ad material than online subjects.

The recent and rapid growth of web advertising into a multi-billion dollar industry (Brannigan, 1996) has sparked renewed interest in the age-old question: Does this new medium work better than traditional media in spreading the advertiser's message? While this question is of obvious practical importance to media planners and other advertising professionals (e.g., Murdock & McGann, 1991), it raises more fundamental theoretical questions about cognitive processes for media scholars: Do people remember advertisements on the internet any differently — or perhaps better — than they do ads in newspapers and television? How much memory do they have for online ads compared to print ads? Are these memory differences, if any, unique to advertising content or are they generalizable to all content?

The present investigation makes an effort to address these questions through a controlled experiment designed to measure memory differences for identical content transmitted via different media. Specifically, the experiment measures recall and recognition of advertising as well as news story content on a newspaper front page and compares it with recall and recognition of the same content presented on a website. The purpose is to track differences, if any, in incidental memory for print and online ads while controlling for memory differences for other, non-ad content. The independent variable is medium, with two values: print and online. The dependent variable is incidental memory for ad content. The control variable is memory for news story content. The research question may be summarized as follows: For media consumers, controlling for story memory, what is the relationship between the type of medium and the level of memory for advertisements?

This paper will first explicate the concepts of medium and memory in the context of advertising effects. It will then present the methods and results of an experiment designed to answer the above-mentioned research question. Finally, it will discuss the findings with a view to enhancing academic understanding of the psychological effects of online media.

Medium

Almost all classical models of communication have conceptualized "medium" as a transmission vehicle, channel or device through which messages are transmitted from senders to receivers (e.g., Lasswell, 1948; Shannon & Weaver, 1949; Schramm, 1954; Berlo, 1960). Implicit in this conceptualization is the idea that the medium of communication is a variable capable of altering the nature of communication between senders and receivers. McLuhan (1964) was among the first to problematize "medium" when he proclaimed that the psychosocial effects of media on audiences far outweigh the effects of message content. He theorized that technologies in general and media technologies in particular were transmitting their own messages, which were much more powerful and all-encompassing than the effects of "content" on the masses. With a broad social-psychological sweep that would forever change generations of humans, new media introduce changes in scale, pace and pattern into human affairs. "The effects of technology do not occur at the level of opinions or concepts, but alter sense ratios or patterns of perception steadily and without any resistance." (p. 18)

The advertising profession, more than any other media enterprise, has long recognized the psychological effects of media technologies by explicitly comparing different media while making

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campaign decisions regarding media mix (e.g., Stewart & Ward, 1994). This is especially the case since the arrival of "new media," meaning computers and the internet (e.g., Fletcher, Wheeler & Wright, 1991). In addition to measuring various media for their relative reach of audiences (e.g., Stewart & Ward, 1994), the advertising industry keenly pursues audience's psychological reactions to different media by trying to assess the "standing of the media vehicle" in the minds of the audience (Murdock & McGann, 1991).

The idea of viewing "medium" as a function of the receiver has spawned a number of psychological definitions of media technologies. Instead of considering media purely in terms of industry-based delivery systems (cable, film) or whole technologies (radio, TV) as scholars in the effects tradition do, these definitions adopt a psycho-centric perspective by aligning stimuli transmitted by media to receivers along a number of psychological dimensions. One such dimension is modality (Pfau, 1990), which refers to the mode of presentation — text, audio, picture, video — that corresponds to human senses used for processing the presented material. Other dimensions include the degree of notationality (Goodman, 1976), repleteness (Salomon, 1983), mental representation (Goel, 1990), intended symbolicity (Worth & Gross, 1974), informational and computational equivalence (Simon, 1978), realism or vividness (Steuer, 1992) and interactivity (Rafaeli, 1985; Steuer, 1992).

Such definitions of medium — based as they are on user-centered criteria — facilitate a variable-based approach to communication research (Nass & Mason, 1990) by helping to isolate the precise variables of media technologies — and the values on those variables — that cause the observed changes in receivers' processing as well as responses to media stimuli. For example, research on modality of presentation has resulted in how visual stimuli and auditory stimuli are differently processed (e.g., Penney, 1989; Glenberg, Mann, Altman, Forman & Procise, 1989; Leigh, 1992) and how an interaction of the two stimuli could lead to behavior changes (Guthrie, 1988; Heath & Luff, 1992; Rice & Love, 1987). The variable-based approach has also led some researchers to pinpoint the precise features of media technologies that contribute to changes in cognitive spaces devoted to — and cognitive effort expended for — paying attention to stimuli (e.g., Bargh, 1988; Krugman, 1983), information processing (e.g., Palmer & MacNeil, 1991; Ault, 1983) and memory (Kellerman, 1985).

In addition to definitions, theories about media effects have historically used user-centered criteria to distinguish between various media vehicles. While uses and gratifications theories document user expectations of — and patterns of exposure to — different forms of media (Rubin, 1994), cognitive response theories such as the elaboration likelihood model (Petty & Cacioppo, 1986) have posited that certain stimuli in certain media are processed "centrally" (i.e., with considerable expenditure of cognitive energy) while stimuli in other media are typically processed "peripherally," with little or no cognitive involvement or effort. This distinction between central and peripheral processing echoes the distinction made by McLuhan (1964) between "hot" and "cold" media wherein the former elicit active engagement by audience members while the latter are responded to passively. Krugman (1966) and Wright (1981) have both empirically documented the wide differences in the amount of brain activity while using different media technologies such as television and print.

Apart from having powerful effects on receivers, media technologies also dictate the nature of content delivered through them (Innis, 1951; Czitrom, 1982; Bolter, 1984; Beniger, 1987). A number of studies have shown that the content piped through different transmission media is different because the nature of content transmitted by any given medium is shaped by the technological imperatives of — as well as the psychological orientations invoked by — that medium (e.g., Balon, 1977).

In sum, the converging evidence from theory and research suggests considerable psychological differences in the processing of stimuli transmitted by different media. However, as Stewart & Ward (1994) point out, much of the research has focused on differences between traditional mass media such as radio, television and print, with little or no attention being paid to new media such as computer information services. It is an empirical question whether past research on advertising effects of different media are applicable to new media.

The present investigation is designed in part to answer this question. Since the study reported here attempts to compare traditional print medium with the new online medium, important questions about differences in the psychological importance of "medium" and "modality" come to the fore. As the modality of both print and online media is predominantly textual, a good case could be made for the absence of any psychological differences between the two. On the other hand, the difference in the delivery vehicle (paper versus computer) could be argued to have significant psychological effects, as suggested by the growing literature on the socialness of human-computer interaction (e.g., Nass & Steuer, 1993; Sundar, 1994).

Memory

The concept of "memory" has enjoyed a long, rich tradition as a criterion variable in communication research — not just because advertisers are interested in finding out how effective their campaigns were in "getting through" (Krugman, 1986), but because scholars have continually used memory as an operational indicator of a variety of higher-order concepts in information processing such as attention, involvement, arousal, habituation and learning (Geiger & Newhagen, 1993).

Human memory is a complex phenomenon, with different locations in the brain used for different mental operations. Among the components of memory are cues affecting the sensory organs (Atkinson & Allen, 1983). The memory structure is divided into short-term and long-term sub-structures. The former is the locus of consciousness (Kellerman, 1985) and has limited capacity (Bower & Springston, 1970). The latter is comprised of semantic long-term memory concerned with structural information and episodic long-term memory for contextually dependent information (Kellerman, 1985).

While psychologists actively study encoding processes of memory, communication researchers typically draw conclusions about memory based on retrieval of stimulus information by subjects. Memory is typically measured in two ways: recall and recognition. Recall is affected by almost all substructures of memory while recognition tasks typically entail a less rigorous involvement of memory structures.

Recall and recognition of news stories have been measured by numerous investigators studying differences in the amount of learning from different media, especially print versus television (e.g., DeFleur, Davenport, Cronin & DeFleur, 1992). Surveys of television viewers minutes after they voluntarily watched the evening news have shown that they remember very little (e.g., Findahl & Hoijer, 1985). This has been used as a measure of attention by some researchers (e.g., Levy, 1978) who contend that people generally do not give television news their full attention because they are simultaneously engaged in a variety of competing activities like eating and cooking. Agenda-setting researchers have used recall and recognition of major issues in the news and correlated them with the level of newspaper and television coverage of those issues (McCombs, 1994). However, such survey-based measures of memory have proved less reliable than recall and recognition measures administered in experimental settings.

DeFleur et al (1992) conducted an experiment that made an inter-media comparison between TV, radio, newspaper, and computer. Their subjects recalled about the same amount of news information from newspaper and computer, but differed significantly from television and radio. The researchers accounted for the lack of differences between the newspaper and computer conditions by proposing that both these media represent the same modality. They suggested that both are "print media requiring a quite similar cognitive processing unlike that of the audio-visual or audio-only versions related to TV and radio." (p. 1020) Other studies involving online news have concluded that online information is not all processed in a cyber-haze but attended to as deliberately as printed news stories (Sundar & Nass, 1996; Sundar, 1996).

Extending these findings with news information to the present study, it may be tempting to speculate that recall and recognition of advertising content will not differ between print and online conditions. However, numerous studies have documented the enormous differences in the nature of processing of news and advertisements (Stewart & Ward, 1994). Typically, news occupies the centrestage of any publication. Ads are often relegated to the corners of the newshole, face greater informational competition and hence have a lesser chance of gaining reader attention. Therefore, while memory for news stories may be conceptualized as "central memory" (meaning semantic long-term memory), the memory for ad content may be thought of as "incidental memory" (short-term or episodic long-term memory). The memory for ad-related material may be all the more incidental in online media because of the "I-read-somewhere-that" phenomenon (Sundar, 1996) wherein users are said to be psychologically incapable of remembering the origin of the different pieces of cyber-information because of the multiplicity of sources in online media.

Given the paucity of past research on such incidental memory for advertising content, no specific directional hypotheses can be proposed for the current study. Nor can we predict that there will in fact be a difference in ad memory between print and online conditions. The works of McLuhan (1964) and other technological determinists detailed in the previous section would lead us to expect differences between print and online media. However, the findings with news recall (DeFleur et al, 1992) and the fact that both print and online share the same mode despite being different media could be strong arguments for finding no differences. Therefore, this study performs a critical test of two competing schools of thought on the processing of print and online stimuli.

Method

All subjects (N = 48) in a between-subjects experiment were exposed to the front page of a fictitious newspaper featuring two news stories and one advertisement. Half the subjects read the page in print form while the other half read the same content in online form. After subjects read the page, their memory for ad content as well as story content were measured by a battery of recall and recognition questions administered via a paper-and-pencil questionnaire. The independent variable, Medium, was operationalized in terms of the two manipulated conditions while the dependent variable, Ad Memory, was operationalized as a ratio measure computed from the number of correct responses to ad-related memory questions on the questionnaire. The control variable, Story Memory, was operationalized in terms of the number of correct responses provided by subjects to story-related memory questions in the questionnaire.

Subjects

Forty-eight undergraduate students enrolled in communications classes participated in the experiment. Half the subjects were randomly assigned to the print condition while the other half were assigned to the online condition. Both genders were equally represented in both conditions. All subjects signed an informed consent form prior to their participation in the experiment.

Stimulus Material

In order to increase the generalizability of the experiment's results, the news stories and the ad were taken verbatim from actual newspapers and edited only for length. However, in the case of the advertisement, which offered free installation of car stereos, the name of the store was changed to prevent any influence of subjects' familiarity with the local business. The ad was exclusively textual, but featured a lot of bold lettering, size and font variations and a distinct border much like the display ad seen in newspapers and websites. It also included a vertical banner proclaiming "Big SALE." The news stories were carefully chosen to include typical, routine content which would be unlikely to evoke strong positive or negative emotions. The first story was titled "Malpractice Law: A Defective Product." It dealt with the number of medical malpractice lawsuits submitted in the state of New York. Since the story originally appeared in the news over three years ago, it reduced the likelihood of respondents' memory being affected by its recency or timeliness. The other news story was an international story entitled "King Hussein's visit makes statement." This was a report about the visit of Jordan's King Hussein to Jericho since the Palestinians took control of the West Bank as part of the Middle East Peace Accords. The domestic story was considerably longer (32 lines) than the international story (17 lines).

At the very top of the page was the masthead featuring the name of the newspaper, "The Daily Star," in bold letters and stylized font. This was followed by a line indicating date, volume number

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and issue number. Below this line, occupying two-thirds of the width of the page on the top left-hand side was the domestic story with a headline and byline. Below that was the international story with a headline and byline. On the right-hand side of the page, occupying the remaining one-third of the width, was the ad for a car stereo store featuring names of car stereo brands and company names, as well as larger font sizes compared to the font of the news stories.

Experimental Treatment Conditions

Both the print and online versions of the stimulus were made to look similar in order to optimize treatment equivalence. The two news stories and the advertisement read by subjects in the two conditions were identical in content as well as layout. Moreover, the size of the print version of the newspaper was that of a 11" x 14" tabloid. This was done in order to maintain consistency with the online version, which was displayed to subjects on 11" x 14" computer monitors. The only discrepancy between the conditions was in font size: While the font size of the text for the print condition was 12 pt., it was only 10 pt. for the online condition. This was necessary not only to accommodate all the content on a single computer screen without having the subjects scroll down, but also to enhance the resemblance between the overall appearance of online and print versions.

In addition to the print-online manipulation, there was another manipulation unrelated to the present study: One-half of the subjects in both print and online conditions was exposed to the black-and-white version of the ad while the other half was exposed to a colorized version of the same ad.

Dependent Measures

The dependent variable of ad memory was operationalized in the form of five different questions in the paper-and-pencil questionnaire. All five questions tested subjects' memory for various aspects of the ad's content. Two of the five questions were recall measures (e.g., "What do you know about the advertiser's sale/installation procedure based on the advertisement?) with an open-ended response option. The other three questions were recognition measures (e.g., "The advertisement made which one of the following claims?) with multiple-choice, closed-ended response options (e.g., a. lowered prices; b. free after-sale service; c. free gift with purchase; d. free car batteries with purchase; e. free car upholstery with purchase).

Control Measures

In order to test whether memory differences between print and online content were unique to ads or generalized even to news stories, measures were included in the questionnaire to assess subjects' memory for story content. In all, 14 questions were used to test for story memory — four recognition questions and three recall questions relating to each of the two stories.

Procedure

The experiment was administered to groups of subjects in a classroom setting. However, all subjects in a given group administration belonged to the same condition (i.e., print or online). Subjects were informed that they were participating in a study that compared different formats of a newspaper. After the informed consent forms were signed, copies of the print version of the newspaper were distributed to the subjects in the print condition. In the online condition, experimenters directed subjects to view the Daily Star website on the computer monitors in the classroom. Subjects in both conditions were encouraged to read the newspaper like they would read any other newspaper. Once all subjects had finished reading the Daily Star front page, they were handed a paper-and-pencil questionnaire and asked to answer the questions without referring to the news stories. After all the subjects handed in their questionnaires, they were debriefed, thanked for their participation and dismissed.

Data Analysis

Both recall and recognition questions pertaining to ad content as well as story content were given numerical values for correct and incorrect answers. Correct responses were coded as 1 and incorrect answers as 0. Since all questions pertained to factual aspects of ad and story content, the recall and recognition items could be coded without any ambiguity. Questions that were left blank or answered as "don't remember" were coded as incorrect.

Additive indices were constructed to arrive at composite measures of ad memory and story memory before entering them as dependent variables in analyses of variance to detect memory differences between print and online subjects.

Results

All 14 items measuring subjects' memory for content of the two stories were subjected to a factor analysis in order to determine if the recall items would load under a factor distinct from the recognition items. No such pattern emerged. Furthermore, when additive indices of story recall and story recognition were created, their internal consistency indicators were too low (Cronbach's *alpha* < .4) to reliably enter them as dependent variables. Additionally, the factor analysis revealed that subjects' memory for the domestic news story was not systematically different from their memory for the international story. Therefore, it was decided to construct an additive index of all fourteen items pertaining to the two stories and use that index as an overall measure of story memory. Similarly, an additive index of all five items pertaining to ad content was created as an overall measure of ad memory.

When the story memory index (Cronbach's *alpha*: .72) was entered as a dependent variable in a one-way analysis of variance between the two medium conditions (print vs. online), no significant difference in means was discovered between print subjects (M = 6.33) and online subjects (M = 6.04), F (1, 46) = .10, p = .74. Subjects in both conditions averaged about six correct responses out of 14 questions.

However, when the ad memory index (Cronbach's *alpha*: .68) was subjected to the same analysis, there was a significant difference in the means of print (M = 3.91) and online (M = 2.87) subjects, F (1, 46) = 6.47, p < .05. Given a total of five memory questions about the ad content, subjects in the print condition provided nearly four correct responses on average while subjects in the online condition provided less than three correct responses.

These results with ad memory as the dependent variable are a little suspect because the ad memory index does not completely meet the normality

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assumptions of the one-way ANOVA procedure. While the 24 subjects in the online condition showed a normal distribution of scores on the ad memory index (Shapiro-Wilk $W = .91$, $p > .05$), the print subjects displayed a ceiling effect resulting in a significantly non-normal distribution of scores (Shapiro-Wilk $W = .77$, $p < .01$). Transformations on the data failed to repair the skewness.

Therefore, it was decided to construct a new variable that would compute each subject's average score on the ad memory index (i.e., the total number of correct responses on the five-item battery of ad-related questions divided by five), and then subtract from it the subject's average score on the story memory index (i.e., the total number of correct responses on the 14-item battery of story-related questions divided by 14). In fact, this is a superior measure of memory for the ad because it calculates ad memory *by controlling for* story memory.

This new measure was normally distributed in both conditions, and yielded a significant difference in mean scores between print subjects ($M = .33$) and online subjects ($M = .14$) when subjected to a one-way analysis of variance, F (1, 46) = 4.73, $p < .05$. Over and above their memory for story content, print subjects remembered more than twice as much ad material as did online subjects.

The next set of analyses was concerned with the two different types of ad memory: recall and recognition. When the ad recall index (Cronbach's *alpha*: .57) was entered as a dependent variable in a one-way analysis of variance with medium as the independent variable, the difference between print ($M = 1.25$) and online subjects ($M = 0.87$) in their amount of recall of ad material was in the same direction as with the overall ad memory index. However, this difference was not statistically significant, F (1, 46) = 2.49, $p = .12$. When the ad recognition index (Cronbach's *alpha*: .55) was used as a dependent variable in the same analysis, the difference in scores between print subjects ($M = 2.66$) and online subjects ($M = 2$) was very significant, F (1, 46) = 7.36, $p < .01$.

However, these analyses too suffer from the same problem encountered with the overall ad memory index. The ad recall and ad recognition measures do not meet the normality assumptions of the statistical procedure. Therefore, a solution similar to the one described before was adopted: Two new indices were created by subtracting average story recall and story recognition scores from average ad recall and ad recognition scores respectively. These new indices reflected measures of ad recall and ad recognition by controlling for story recall and story recognition respectively.

Both these measures met the normality assumptions of the one-way ANOVA procedure and mirrored the results obtained with the non-normal indices before. The new measure of ad recall failed to statistically distinguish between print ($M = .33$) and online ($M = .16$) subjects, F (1, 46) = 2.13, $p = .15$, while the new measure of ad recognition was very significant in differentiating between print ($M = .34$) and online subjects ($M = .09$), F (1, 46) = 8.99, $p < .01$.

When gender and color were entered as independent variables, both separately and together with the medium manipulation, they failed to show significant results on any of the dependent variables. Therefore, these two variables will not be discussed henceforth in this paper.

In summary, results from the analyses suggest that individuals exposed to news stories and ads in the print medium tend to remember significantly more of the ad content than comparable individuals exposed to identical stories and ads in the online medium. There is no significant difference however on memory for story content between the two groups of individuals. Even when story memory is statistically controlled, memory for print version of the ad is twice as much as memory for online version of the same ad. Specifically, recognition memory is significantly greater for print ads than for identical online ads whereas recall memory for ads in both media is about the same.

Discussion

In this study, we examined the effect of medium (print vs. online) on memory for ad and news information. Memory was operationalized as the sum of recognition and recall of information. Subjects exposed to the print version of a newspaper front page remembered (specifically, *recognized*) significantly more advertisement material than subjects exposed to the same front page online. This result is strengthened by the fact that the difference in ad memory between the two media was demonstrated by explicitly controlling for subjects' memory for news stories, which after all occupied the bulk of the front page.

The study found that subjects in print and online conditions were not statistically different in the amount of news story information they remembered. This not only confirms earlier findings with memory for news information (DeFleur et al, 1992), but also eschews the need for a separate control variable of story memory for the present investigation. Given that print and online subjects were about equal on the story memory index, our control variable is automatically controlled for in this study (thanks to random assignment), and there is no need to worry about story memory being a confound. However, it was arithmetically controlled for in this study purely for reasons of meeting normality assumptions of statistical procedures.

Furthermore, the absence of differences in story memory serves to highlight the fact that ad memory differences between the two groups of subjects is not due to any attentional differences between the two conditions. It is clear that subjects in both conditions were about equal in paying attention to the stimulus because they scored about the same in a test of their memory for story content. Therefore, it cannot be concluded that print and online media command different levels of attention from readers.

The lack of differences in story memory also rules out another explanation for differences in ad memory between the two media. This explanation is based on the difference in font size between the print and online conditions. As mentioned in the methods section of this paper, the text in the online version was smaller in font size than the text in the print version. If this size difference was driving the memory difference for ad content, it would have to affect memory for story content as well. Since it did not, font size difference can be ruled out as an explanation for the study's result.

The reasons for finding higher ad memory scores among subjects exposed to the print medium are more likely to be related to the specific features of print as a medium when compared to online, than to any artifact of the experimental design.

To begin with, the study's result might be a reflection of a novelty effect. Since online advertising

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is relatively new compared to print advertising, users of the online medium may be less prone to notice peripheral attributes like advertising. Therefore, while receivers show no media-based differences in their central processing of news content, they seem to exhibit somewhat lower level of peripheral processing of ad cues in the online context.

Whether this is due to differential processing of different media or due to differential storage and/or retrieval is unclear. Since the recall measure did not show statistical significance (while the recognition measure did), it may be argued that the difference exists in retrieval, not encoding of information. However, given the closeness of the recall measure to statistical significance (not to mention the high likelihood of this measure being significant if it had more questionnaire items than just two) and the general empirical tradition of always finding low recall and high recognition for advertising content (Krugman, 1986), it is premature to conclude that online media and print media differ only in recognition memory, not recall memory. All that can be stated at this stage is that people remember more ad content from print medium than from online medium.

An important theoretical implication of this study is that in order to find differences between two media, it is not necessary for the media to differ in their modality. Both print and online media, at least in this experiment, shared the same mode of text. Therefore, the psychological distinction between these two media is not rooted in modality, but in some other factor(s) central to the media. Perhaps the differences are due to the delivery mechanism. It may be speculated that the paper on which the newspaper is printed allows for the readers' eyes to consume the news page in its entirety, including all the peripheral aspects like advertising, while the computer screen, with its thick boxed boundaries, limit readers' attention to the center of the screen.

Another explanation for the study's finding could be related to receivers' expectations as well as estimations of the appropriateness of advertising in the online medium (Gramig, 1996). It may be argued from a uses-and-gratifications perspective that readers are purposive in their use of online medium, such that they associate this new medium as a channel for news and information and consider it inappropriate for advertising. The image of the internet as a free information network perhaps engenders a psychological predisposition to consider all of its content as free-floating sharing of information rather than as carefully packaged products of advertising and marketing. This attitude may be reflected in readers' careful consideration of the central content of the online news page (namely, news stories) while, at the same time, ignoring peripheral content like advertising.

Regardless of whether the media differences observed in this study are due to receivers' cognitive processing differences or due to psychosocial differences in their orientations toward different media, a clear implication for advertisers is that incidental memory for ad content is significantly lower in online medium compared to print medium. This is of consequence to the recently formed Internet Advertising Bureau which has undertaken the task of making the Web medium a "measurable" entity in order to standardize space-selling and ad spending (Voight, 1996). While advertisers have measured traditional media in terms of their reach of audience members (circulation size or viewership rating), such an approach would be insufficiently informative in the online medium. This study suggests that an ad placed on a news page in a print newspaper is more likely to be remembered than the same ad placed in an online newspaper. Therefore, reader access data of web pages is not a good indicator of the reach of advertising on those websites. Perhaps, the Bureau could place hyperlinks in online ads and track the number of users clicking on that link. That would be a stronger indicator of the reach of the ad in this new medium.

An important practical implication of this study is that, in order for web advertising to work, advertisers have to do more to attract readers than they would in the print medium. For example, animated ads as opposed to still ads might be needed to attract online users. To the extent advertisers use the new features of the online medium that are non-existent in print (audio and video downloads, animated images, hyperlinks, site-maps, etc.), they are probably more likely to enhance user attention to advertising.

Future research should investigate the psychological merits of the new features of online media in the advertising context. Experimental studies in the selective exposure paradigm might be conducted to determine not only how many users consciously process ad material by clicking on them but also which technological features attract what kind of viewers. Information-processing experiments may then be conducted to determine the mechanisms by which these new features help or hinder the reception as well as reaction of audience members in the online context.

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Duopoly Market Structure as Public Policy: Lessons from the Cellular Telephone Industry

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Section 1 - Introduction

The trend to demassification of the media continues unabated in technologically advanced societies (Aumente, 1989). Even as the traditional mass media split into ever more specialized segments, they are being complemented and supplanted by digitized services designed to deliver more specific material to smaller and smaller niche audiences (see Merrill & Lowenstein, 1971, and Maisel, 1973). The ultimate information service--tailored to the preferences of each individual user--has been technologically possible for some years. It may now be only a matter of time before this will become economically feasible on a large scale.

As the media demassify, they acquire more characteristics of point-to-point communication channels--telephone, individualized letters, even conversation. This demassification trend focuses attention on a communications medium which has received relatively little scholarly attention--the telephone. While the traditional mass media have been the subject of a great deal of research over the last several decades, telephone and other point-to-point means of communication have remained stepchildren[1].

The technological trend in the media has been paralleled by--and perhaps related to--a regulatory trend. In the United States, and increasingly in other developed countries, deregulation and privatization of telecommunications channels have been developing for two decades. There is less overt government control over both content and economic aspects, accompanied by an increasing reliance on competition to accomplish the goals of society. The free market is being allowed to replace the old regulatory institutions as both the architect and guardian of the public interest. The belief is growing that the users themselves are the best judges of what consumers want and need, and that government only needs to make it possible for them to exercise freedom of choice.

In a landmark action, Congress in early 1996 passed, and President Clinton signed, the Telecommunications Act of 1996 (S. Res. 652, 1996), which in large part deregulates local telephone service. Once certain conditions are met, the regional Bell operating companies (RBOCs) will be free to enter information services businesses, cable TV companies are now free to offer local telephone-like services, and long distance providers are being allowed to offer local services as well. The Federal Communications Commission (FCC) is overseeing the transition to deregulation. The agency has developed a schedule for the transition, and has begun issuing regulations to facilitate it. This opens some interesting possibilities for cellular firms, which are local in nature but in large part owned by much larger parent companies, to offer new services and form alliances with cable and long distance providers.

Regulation, presumably, is intended to protect the consumer and to induce the regulated industry to meet the needs of the consumer. If the free market is being substituted for regulation to meet policy goals, it is appropriate that we examine how well the free market is meeting these objectives. That is the purpose of this study.

In decisions in 1981 and 1982, the Federal Communication Commission, after several years of study, lobbying by interest groups, debate, and changes of course, decided that the cellular telephone industry in the U S. would be structured as a series of duopoly markets (Cellular Communications Systems, 1981; Cellular Communications Systems (modified), 1982). That is, there would be no more than two licenses issued to provide cellular service in each geographic cellular market. Implementation of this decision began

in 1983 when the first cellular service was offered in the Chicago market, and within four years, there were two vendors in operation in all of the 30 largest markets in the country. Since then, several hundred smaller markets have been formed with the same structure.

Duopoly market structure, as the two-vendor pattern is termed by economists, is frequently used as a model for theoretical work in economics, yet it is infrequently encountered in the real world. As a model, economists often utilize duopoly as a simplified representation of oligopoly, to introduce the element of competition. Thus, the modeling decision is bipolar: monopoly or not monopoly. If the model is to be nonmonopolistic, duopoly is the simplest structure.

The U.S. cellular industry is probably the largest duopoly experiment ever. Although duopoly markets are by no means unknown, the structure is usually the result of economic factors which limit a market to two viable firms, or it is a stage in a growing market which eventually may have more firms or a contracting market which may eventually become a monopoly. Where duopoly markets do exist, they are likely to encounter outside competition at the fringes, or be subject to the threat of entry by new firms. Thus, duopoly markets tend to be fluid, ill-defined and short-lived.

Due to a novel mix of regulation, geography, and politics, American cellular telephone customers are consigned to local duopoly markets Never before in the history of American utility or telecommunications regulation had such a market structure been adopted as a matter of national public policy. This presents an unusual opportunity for investigation into the operation of duopolies in practice, and the implications of the duopoly market structure for public policy.

Cellular Telephone Technology

Cellular telephone (or cellular radio, as it is often called in the industry) is based on the concept that many small radio transmitters can cover an area as effectively as one large one, and make more efficient use of available radio spectrum. This is because radio frequencies can be reused in transmission cells which are not contiguous with one another. The cells using the same frequency band must be separated by enough distance so that they do not interfere with one another on the air. This is accomplished by keeping the transmitter power in each cell relatively low, thus limiting the range.

Cellular telephone technology uses the frequency modulation (FM) mode of transmission, operating at high frequencies. The FCC, when it decided to establish two competing systems in each market, set aside 40 MHz in the 800 MHz area, with 20 MHz for each local system. In 1986, 5 MHz was added for each system. The current spectrum allocations are 824-849 MHz, and 869-894 MHz (Lee, 1989). The radio technology used in cellular radio was well-proven by the time the first experimental systems were being built in the late 1970s. The genius of the idea lies not in arcane technology but in the innovative architecture which used established technologies.

From Regulation to Competition

Telephone service in the U.S. has been regulated since early in the century. American Telephone and Telegraph, which for many years held a virtual monopoly on long distance service and dominated local markets as well, submitted to regulation in return for being allowed to operate as a monopoly. Since regulators and economists generally accepted that telephone service was a "natural monopoly" there was for many decades little or no interest in permitting competition. The FCC, as a major figure in the regulation and policy-making arenas, presided over a convenient compromise which seemed to serve both public and private interests quite nicely. AT&T developed a system of cross-subsidizing local phone service with its monopoly profits from long distance service. This served the national purposes of developing a phone system that went nearly everywhere, was inexpensive enough for most potential demanders, and had a high degree of reliability.

Willing partners in the game were state public utility regulatory agencies. The system was arguably among the best in the world from any point of view.

Increasingly, the role of public utility regulation is to implement and supervise markets where vendors can compete to provide services. Due in large part to advancing technology, industries formerly viewed as inherently monopolistic, such as telephone, are now open to competition. Public policy, by its nature, tends to lag behind developments in the economic and technological arenas, but the Telecommunications Act of 1996 demonstrated that this lag is being reduced. Regulatory agencies on both federal and state levels are reorienting their policies to take advantage of freer markets. The theory is that a competitive environment can serve the public interest as well as or better than a closely regulated one, and reduce government intrusion into what are otherwise private affairs.

Standard evidence of a functioning competitive market would be the steady movement of price toward marginal cost. While we may speculate about declining costs or economies of scale and scope, accurate cost data are difficult to obtain in the cellular industry. Perhaps precisely because the duopoly structure creates at least the appearance of strenuous, head-to-head competition, managers play their hands close to the vest and maintain their information in proprietary fashion. In the absence of cost data, we must look to other behavior of firms to indicate whether or not meaningful competition exists.

Economics and Policy Studies

Communications is a field of study, but not a neatly defined academic discipline. There is no single paradigm or consensus on how to approach its study. Indeed, the communications "community" cannot even decide whether communications is a transmission of mathematically definable signals through channels (Shannon & Weaver, 1949), a group of acts related to linguistics (Cherry, 1959), or a process (DeFleur & Ball-Rokeach, 1982). Clearly, it is all of these and more, and no single paradigm has been formulated to include such widely disparate viewpoints. Relatively few media researchers have approached the field through the paradigm of economics, although in recent years that small group of researchers has gained some visibility.

In recent years, economics and policy studies have emerged as important subfields, especially in telecommunications. Economists study the allocation of resources. Acts of resource allocation constitute behavior, and economics can do an effective job of identifying and tracking relevant behaviors. Data are available that aggregate many of these behaviors and facilitate the study of them for patterns. Policy studies, which may consider the economic perspective, is a broader approach which includes the legal framework, regulatory agencies and issues, and the overarching government-related environment. Its importance is demonstrated by the fact that the Telecommunications Act of 1996 reflects much of the scholarly debate in the field of telecommunications during the past 15 years.

Research Problem

Cellular telephone, although a creation of the Federal Communications Commission, has up to now been the least regulated sector of the telephone industry. It has served as a test site for light regulation and limited competition. This provides a good setting in which to seek answers to the two questions of concern in this paper:

What are appropriate objectives for public policy in the field of telephone?

How well has competition, as demonstrated by the duopoly market structure in the cellular telephone industry achieved those public policy objectives?

Section 2 of this study reviews the scholarly literature on policy development and objectives, regulatory theory, telephone use, and research on competition in cellular telephone. Section 3 develops a list of appropriate policy objectives which duopoly market structure might address and discusses several specific issues. Section 4 discusses the research findings concerning how well duopoly market structure has contributed to meeting

policy objectives. Section 5 summarizes conclusions on the policy issues and suggests further avenues of research.

Section 2 - Review of Literature

Any study of a public policy issue should have a broad perspective. In a democratic society, there is a vast array of constituencies and viewpoints. While not all can be equally served, all deserve to have their interests considered. To accommodate such a variety of needs and voices, various approaches have been used. Two of the most popular approaches to public policy debate have been labeled the market economics and social value schools, or just "market" and "social" by Entman and Wildman (1990). They contend that public policy debates tend to have a circular nature, because adherents of the two schools do not address each other.

The market school, in their lexicon, is composed of analysts who favor an economics approach. They favor allocation of resources according to willingness to pay, with the primary objective of economic efficiency. Market-oriented analysts also presume that encouraging competition, which allows individuals to exercise their preferences, is the best means of assuring efficiency. The social school, as defined by Entman and Wildman, is more concerned with possible positive and negative effects upon society. Maximization of social welfare is the primary objective, and in the short run at least, individual choice may not further that objective. Implicit in the social approach is the belief that government or some other institution may be superior to the market in directing allocation of resources for the social good. The social school adherents, according to Entman and Wilder, tend to focus on the negative social effects of the market approach.

Any public policy, by its nature, will favor certain groups and goals over others. Much of the debate over public policy involves balancing the demands of different constituencies, possibly with equally high needs and motives, who stand to gain or lose benefits under various regimes. Regulatory agencies must strive to reconcile opposing groups and policies and make decisions that will maximize benefits to the public.

Public Policy Development

Telecommunications policy in the past has been, in large part, the prerogative of the FCC. As the federal government, with prodding from the Clinton administration, pursues and enlarges its positive, activist role in developing a national information infrastructure (NII), the relative importance of regulation may be reduced. This reduction in the FCC's role may never completely eliminate the perceived need for regulation in telecommunications in general and telephone in particular. Even some of the strongest proponents of deregulation concede that the telecommunications market may never be effective enough to make regulatory oversight unnecessary.[2]

Noll and Owen (1983, pg. 161) argue that "there ought to be a presumption--open to rebuttal--in favor of competitive market approaches for achieving social control of business." In a similar vein, Breyer (1982, pg. 185) says that the least restrictive approach, which "would view regulation through a procompetitive lens," would help reduce the problems associated with regulation, and he endorses the preference for competition. The U. S. Congress signaled its agreement with this position when it passed the Telecommunications Act of 1996, which substantially reversed some long-standing policies of the FCC and modified the Communications Act of 1934. The FCC on Aug. 1, 1996 adopted a set of rules intended to implement the local competition provisions of the 1996 act (FCC NEWSReport No. DC 96-75).

Garcia (1995) argues that the political arena is the best place to choose among competing values. Economic efficiency, she and others point out, may be a worthy motive, but it is not the only motive in public considerations. Ironically, the political system--Congress and the President--was the venue where last year the decision was made to allow the lightly regulated free market and presumably economic efficiency determine the future

development of the American telecommunications system. Conflicts between values and ideologies are cited by Noll (1989) as a fundamental reason for continuing policy disagreements. He contends that the different centers of responsibility each tend to focus on only part of the problem and may even deny the existence of conflicts.

Entman and Wildman (1990) make a persuasive argument that economic efficiency considerations are inadequate for the media policy debate. They posit that the limited diversity of ideas in the media represents a failure on the part of consumers to demand and seek out greater diversity, a sort of intellectual market failure. They go so far as to suggest that the demand for ideas in mass media may be quite low and inelastic, given the difficulty for individuals to survey and absorb a wide range of ideas. However, except for a call to market school adherents to broaden their perspective, Entman and Wildman offer no positive suggestions as to how to redefine the policy debate to give proper weight to noneconomic considerations.

The economics-based approach to public policy has undergone recent reexamination. Regulatory economists have, for the most part, focused on the supply side of telecommunications industries. That is, they have given most attention to analysis associated with the provision of service and costs involved. Recently, however, several analysts and critics have suggested that more attention be given to the consumer. Miller (1996) criticizes the approach of neoclassical economics to telecommunications regulation, which she charges ignores the "value of service" or demand side considerations. Graham, Cornford and Marvin (1996) argue that, because discussions of telecommunications issues are conducted largely within the confines of regulatory economics, the debate is too constrained. They urge that broader social and economic benefits be brought into the discussion of universal service and other societal objectives. Mueller (1996), Blackman (1995) and Hudson (1994) also advocate a broader view of the issues, with more attention on the demand side.

The question of fairness is sometimes raised in discussions over access to telephone and other information services. Zajac (1978) argues that allocative efficiency and social fairness are in tension. "As always, one must bear in mind the inherent conflict between economic efficiency, which satisfies a very minimum criterion of economic justice, and other possible justice or fairness viewpoints. In particular, it is easy in pursuing some superficially attractive economic justice idea to undermine economic efficiency" (Zajac, 1978, p. 105). Wolf (1988) suggests that the additional objective of distributional equity should be considered by economists and policy makers who use economic analysis. He argues that in the world of public policy, issues of distributional equity are more influential than economic efficiency.

A number of public policy objectives for telecommunications have been suggested by various authorities, including Noam (1994 and 1995), Egan and Wildman (1994), Smith (1989), and Drake (1995). Although there is no consensus on many of these objectives, the following have been suggested:

Traditional objectives

1) Universal service
2) High quality of service
3) Encouragement of improvement, innovation and evolution

New and developing objectives

1) Diversity of ownership
2) Physical interconnectivity
3) Public affairs objectives, including the free access to appropriate information and encouragement of wider participation in government
4) Uncensored information flow
5) Prevention of oligopolistic behavior by integrators and carriers
6) Competition at all levels
7) Continuing rate regulation of carriers with market power

8) International symmetry
9) Development of international standards acceptable to all
10) Elimination of restrictive business practices internationally
11) Development of appropriate privacy protections
12) Balance of intellectual property protections between producers and users
13) Support for technology development, especially for small organizations
14) Training of workers for information professions.
15) Opening of policy making process to democratic participation
16) Participatory fairness in access to new services

Many of these are of limited relevance to cellular telephone and the study of duopoly market structure. However, all of these objectives, if adopted widely, could shape the larger environment within which cellular operates, especially internationally.

Regulatory Theory and Practice

The conventional view of government regulation of private enterprise is that regulation is carried out in the public interest to protect the consumer and citizen from excesses of business (Stigler, 1971; Horwitz, 1989). The theory, as applied to utilities, says that because most utilities are monopolies within their service areas, regulatory agencies must oversee them to assure that rates are reasonable and standards of service adequate. Stigler (1971) breaks with this view and theorizes that certain industries will welcome regulation to protect themselves from competition.

Presenting a revised theory of regulation, Horwitz (1989) argues that regulatory agencies are in an inherently weak position. They are constrained by a combination of a vague, often contradictory mandate, potential judicial oversight, pressures from Congress and the executive branch, and pressure from industries whose framework existed before the agency. These constraints result in the regulatory agency making decisions by bargaining, which casts the agency in the role of arbitrator or facilitator, not policy-maker. Geller (1995), describing the federal telecommunications policy making environment, presents a picture very close to the Horwitz model: a variety of institutions and agencies which influence policy in various ways, operating in a setting where mandates are vaguely stated and often in conflict.

The public interest goal of the regulatory authority in a monopoly market is to use substitute means to accomplish the functions usually accomplished by the price mechanism in unregulated markets (Mayo & Flynn, 1988); that is, to drive prices lower than those normally charged by a monopolist, toward marginal cost.

If the regulator succeeds in forcing the monopoly firm to charge less than the normal monopoly price, this will lead to increased consumption at the lower price, and therefore greater consumer surplus, at the expense of some producer surplus. Ideally, the regulator will be able to force price down the demand curve to the point where price is equal to marginal cost. At this point, efficiency in the allocation of resources is maximized (Bailey & Baumol, 1984).

In the case of the telephone industry, government intervention historically balanced the power between the monopoly suppliers and small users (Noam, 1994). Empirical work by Teske (1990) supports Noam's evaluation.

Personal Use of the Telephone

The process of personalization or demassification of the media taking place in technologically advanced countries is creating a technology-based communication system that more and more resembles traditional face-to-face communication.[3] The system is becoming decentralized and users may now communicate directly with each other in all directions, not just through a mass medium. The new media are characterized by an abundance of channels, a variety of content options, and the virtual elimination of transmission barriers.

The limited available scholarship on how people use the telephone, which in America is the primary channel of interpersonal mediated communication, indicates that acquisition of information in the traditional sense is not the sole reason for telephone use. Indeed, information acquisition may lag behind social purposes for many telephone users.

Keller (1977) described two widely differing types of uses for the telephone, which she calls instrumental and intrinsic. Instrumental uses include such practical purposes as reporting emergencies, ordering goods and making appointments. Intrinsic uses involve facilitation of social contacts. She suggested that the telephone helps to create communities and strengthen communities created by other means.

In her study of a small Midwest town, Rakow (1992) documented that men and women typically use the phone for very different purposes. Women, who maintain social contacts for themselves and the family, use the phone for this purpose. They are comfortable with the intimacy of the device, as noted by Keller (1977) and Mayer (1977). Men in Rakow's study were likely to use the phone less, keep their calls short, and only use the phone when it was needed for business purposes. To apply Keller's terminology, women in Rakow's study used the phone primarily for intrinsic purposes, while men used it mainly for instrumental reasons. Women were also far heavier phone users, which is consistent with the findings of O'Keefe and Sulanowski (1992).

O'Keefe and Sulanowski, employing the uses and gratifications paradigm to examine the motivations of telephone subscribers, found four broad types of gratification factors which personal telephone use satisfies: sociability, entertainment, information acquisition, and time management. Of these, sociability was by far the most significant.

Another source of gratification labeled reassurance was identified by Dimmick, Sikand, and Patterson (1994). Reporting on three studies, they found that the availability of a telephone provides reassurance, even though it may not be used frequently for that purpose. Their studies also documented the findings of Keller and Rakow regarding the use of the phone for social and business gratifications.

All of the foregoing studies involved only phone use for voice conversations. Little scholarly research has been found which probes the purposes which underlie phone system use for the transmission of computer data, relay of broadcast signals, etc. Some research is being done on Internet use, but the telephone system is considered merely a component link or access means, and therefore is not the focus of such studies.

Value of Telephone Usage

It's a long leap from ascertaining that users obtain various benefits from telephone service to the determination of the demand-side value of telephone service. Economists conceive that some customers reap enormous benefits from telephone service, while others benefit less, resulting in a downward-sloping demand curve. Scholars such as Machlup (1980), Monk (1982), Dervin and Nilan (1986) and Zurkowski (1989) have wrestled with the task of evaluating information. Ultimately, as with other economic goods, the value of information depends on the need or desire of the consumer for that information, and the same principle applies to other benefits of telephone usage. In the case of a networked system, such as telephone, the problem of placing value is made more complex by the existence of the network externality -- the quality that the value of the system increases with the addition of more customers.

Competition in Cellular Telephone

Little scholarly research has been published on the economic effectiveness of structure and competition in the cellular telephone industry, or the implications of industry operations in the public policy realm. One unpublished study (Fullerton, 1996) found evidence of moderate competition in the American cellular industry. A study of the cellular industry in Germany found that competition was substantial in terms of service quality, but that price competition was lacking (Stoetzer & Tewes, 1996).

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Adams (1990) used a body of theory called rivalry to examine entry behavior, including pricing, in cellular telephone markets. He found that, although cellular firms changed pricing strategies frequently, there was no support for rivalry theory based hypotheses in the determination of competitive behavior in cellular markets. Adams looked at such independent variables as pricing, quality differentiation, and market focus.

Ruiz (1994), using an extensive data set from a single time period, tested hypotheses on the effects of product differentiation, capacity constraints, regulation, and multimarket interaction, on cellular telephone pricing. She found no statistical support for hypotheses that regulation, product differentiation, or multimarket interaction affected prices. Two tests for the effect of capacity constraints produced contradictory results.

Danner (1991), a California regulatory agency official, expressed frustration at trying to determine whether a cellular telephone duopoly is competitive or not. Oligopolists, he asserted, will customarily charge the same price. If they compete, duopolists will set their prices the same. If they collude, duopolists will also set their prices the same, but higher than under competition. From observation of price behavior, regulators cannot tell whether competition or collusion is taking place, because either may result in uniform prices.

Fullerton (1996) evaluated the intensity of competition in the original 30 cellular markets, using indices which reflected the following characteristics: general trend in prices, disparity in prices between competitors, multiple pricing strategies for market segmentation, and the addition of special features to enhance and differentiate service. He determined that overall, these markets exhibited a moderate level of competition, which is consistent with the prediction of duopoly theory. In virtually all of the first U.S. cellular markets, prices either decreased or rose at rates slower than inflation during the first seven years of operation. Most vendors also offered a variety of pricing plans and added technical enhancements to improve service during the initial years.

Stoetzer and Tewes (1996) examined the cellular industry in Germany, which was a national monopoly until 1992, when a second operator entered, followed by a third operator in 1994. Although the competitive history is short, they determined that the firms compete strenuously on the basis of service, but not price. In the German setting, there were three firms competing, offering four services using three different technologies, so the picture is considerably more complex than local duopoly in the U.S. This German market structure may resemble the American market structure a few years down the road, so the lessons may eventually be applicable elsewhere.

Section 3 -- Policy Objectives

Although economists widely agree that competition is generally desirable, it is not an end in itself. Rather, it is a condition which may bring about other socially desirable results, most especially lower prices. And while lower prices are certainly welcomed, in order to increase consumer surplus and widen the availability of services, public policy may pursue other goals as well. From the limited perspective of cellular telephone, this paper proposes that the following objectives from the earlier list be considered appropriate to the examination of duopoly as public policy:

1) Universal service (in terms of equal and affordable access)
2) High quality of service
3) Encouragement of improvement, innovation and evolution
4) Prevention of oligopolistic behavior by integrators and carriers
5) Rate regulation of carriers with market power

The first two are traditional values of the U. S. telephone system and its regulators, and are equally applicable to cellular systems. Some might argue that universal service is not relevant to cellular, because mobile service is not a necessity. However, there is evidence that airwaves technologies will supplement or extend the range of wireline service in the future, and cellular could be a cost-effective alternative. Cellular is also beginning to bypass the local networks for long distance access. Objective 3 is both technical and

economic in focus and is a logical extension of objective 2. Continuing shifts in market structure and relative market power of participants require that attention to be given to objectives 4 and 5.

Some of these objectives are specified or implied in the Telecommunications Act of 1996, which makes them U.S. policy by law. Although the intent of the 1996 act is to substitute, in large part, free market forces for regulatory control, it is clear that Congress did not trust economic pressures alone to achieve all of the desired public policy goals.

Assessing Public Policy

The five policy objectives are restated and expanded specifically for application to cellular as follows:

1) Is the duopoly structure of the local cellular telephone market likely to increase access to telephone systems for consumers who cannot presently gain such access? Can public policy formulators take advantage of cellular market conditions to extend accessibility and pursue the ideal of universal service? Will access be equitable for the various segments of society?
2) Does duopoly structure promote high quality service?
3) Does duopoly structure encourage innovation and development of the telephone system?
4) Can oligopolistic behavior which is counter to consumer interest be prevented or minimized within a duopolistic environment? Is the observed performance an improvement over the performance of regulated monopolies in the telephone industry?
5) Is rate regulation justified or desirable?

Related Public Policy Issues

Several specific problem areas are inherent in this discussion of policy. Some are issues that are central to any public debate on the provision and regulation of services, while others are more specific to telephone and similar services.

Price: It is often considered axiomatic (though not always true) that lower prices are desirable in a society which assumes the dominant viewpoint of the consumer. From a public policy viewpoint, the ideal flat (undifferentiated) price for the consumer to pay for a good or service would generally be the marginal cost of production. Pricing at long run marginal cost enables the producer to cover the additional variable cost incurred in serving a new customer, including the cost of capital, and thus remain a viable business.

Under a regime of flat pricing, total surplus (consumer surplus plus producer surplus) will be maximized when price equals marginal cost (at the point where D = MC). If the price is set higher than this point, the number of willing purchasers will decrease. If the price is set below marginal cost, either the producer will suffer a loss, or the producer will restrict production, leading to unfulfilled demand at that price, a form of market failure. Any of these results will reduce the total benefit to society.

The problem with marginal cost pricing is that in some situations, it may not be sufficient to cover the costs of capitalizing and operating the firm. This is very possible in the case of a telecommunications utility, which incurs a large investment before being able to offer the service, and which is likely to have declining marginal costs throughout the relevant range of operations. Therefore every sale at marginal cost loses money. The firm cannot remain viable under such conditions. The firm must operate under what is called its revenue requirement, or more broadly, the balanced budget constraint. That constraint is the amount of revenue required for the firm to able to cover all of its costs to become and remain viable.

Alternatives may be possible through various forms of nonlinear pricing. Since two-part tariffs are now standard in the cellular telephone industry, it may be possible to structure these tariffs to take advantage of the greater consumer surplus and inelasticity of

demand of certain customers, in much the same way as the airline industry. This in turn may make it possible for the producer to sell some production at or below marginal cost, and still not reduce total profits.

One two-part tariff model shifts more of the fixed costs to consumers that have high surplus, making it possible for firms with declining MC to offer service to more consumers at the margin. Since these high-surplus consumers still find that their utility exceeds the price of service, this strategy will not discourage them from continuing to subscribe. The practical effect of such a shift may be twofold: To make service available to customers with less ability to pay, and also to increase the value of service because of the network externality effect. In this manner, the ideal of universal service affordable for every potential user is more nearly fulfilled.

Telecommunications services are a highly unusual product, in that marginal cost in non-peak periods may have a marginal cost of nearly zero (Mitchell & Vogelsang, 1991). This can create some socially beneficial possibilities for both vendors and policy makers, because extremely low pricing at times when facilities are not heavily used may be possible without straining capacity or reducing profits.[4]

Universal Service: One of the long-standing attributes--and traditions--of the American telephone system has been its commitment to provide virtual universal service to homes and businesses. With the help of a complex system of cross-subsidies, developed by American Telephone & Telegraph and sanctioned by federal and state regulatory agencies, the public switched telephone network (PSTN) reached 93 percent of American households by 1980 (Cain & MacDonald, 1991). Although the rate dipped slightly in the 1980s, it remained above 90 percent, and climbed back to the 93-94 percent range in the 1990s.

The term universal service has traditionally been used in two ways: 1) Service available everywhere, as a result of the Bell system's commitment to provide it; 2) Service available at such a price that virtually everyone can afford it. The term "universal access" has been suggested as more specifically describing such service (Hills, 1989). Both meanings were eventually adopted, as least tacitly, by regulatory agencies in approving AT&T's policies and practices. Having achieved a monopoly in long distance service, and a strongly dominant position in local service, AT&T embraced regulation as a means of guaranteeing its position and assuring both profits and public acceptance, thus moving toward the capture model of Stigler (1971).

More recently, scholars and policy-makers have suggested that the concept of universal service should be broadened to include access to such services as wireless networks, the Internet and database information resources (Rapp, 1996; Frieden, 1995; Faulhaber, 1995). The argument is made that the gap between the information-rich and the information-poor will further widen, unless the broadband infrastructure which provides access to information is open and affordable to all.

Cross-subsidies: In promising to provide telephone service almost anywhere, the conventional telephone system has to string wires in sparsely populated rural areas as well as dense cities, involving much higher capital expenditure per rural subscriber. Someone has to pay the cost of such investment, and overall, the system has to earn a satisfactory return. Providing service to all who desire it requires adequate revenue, even though some subscribers cannot pay a market-based or cost-based rate. Both problems necessitate subsidies of some type, leading to the classic cross-subsidy situation.

As some of these subsidies disappeared and local rates increased substantially during the 1980s, there was some predictable attrition in telephone market penetration. Despite the increase in local rates and imposition of long-distance access charges, the dip in the household penetration rate was short-lived.

The access fee is generally conceived as covering the non-traffic-sensitive (NTS) portion of the costs of providing phone service. Such costs are about the same, within a given exchange or community, for all users in a class, such as residential. The traffic-sensitive (TS) costs are charged at a rate which varies with usage. However, the fixed costs

can vary widely between geographical areas, or between the type of service supported. Advocates of the universal service concept who want to provide more access for the poor generally favor a subsidy for the access fee, which is expected to cover the NTS costs. Subscribers on limited incomes, it is reasoned, can control the amount of calling they do, and therefore keep TS-related charges down by choice[5]. So the question often comes down to the source of the revenue to subsidize the access fee.

A frequently reported debate pits those who think that access charges for the poor should be subsidized by other telephone subscribers against those who feel the subsidy should come from general tax revenues (see Gillis, Jenkins & Leitzel, 1986; Snowberger, 1990). This debate carries political as well as economic overtones. Proponents of subsidization from other system users rest their economic argument in part on the existence of network externalities. Couched in different terms, the marginal social cost of adding a subscriber is less than the marginal production cost, because of the benefit from the network externality (Willig, 1979; Gillis et al., 1986). It is possible that the increase in consumer surplus attributable to network externality may exceed the actual cost of hookup at the margin.

Universal service is threatened by a fully competitive phone environment, Noam (1995) and others argue. Phone service vendors no longer have incentive to offer lower price service to protected classes of users, and there is no ready source of funds for such cross-subsidies. Noam suggests that government set up a mechanism to subsidize the poorest class of customers to assure that they get adequate service. Dordick (1995) and Noam suggest several ways that this could be accomplished.

In the Telecommunications Act of 1996 (S. Res. 652, 1996), Congress attempted to meet this threat to universal service by assuring quality services at reasonable rates, access to advanced services in all regions, rates in rural, insular and high-cost areas reasonably comparable to those charged in urban areas, contributions in support of such services from all providers of telecommunications services, and access to advanced services for schools, health care providers and libraries. The Federal-State Joint Board on Universal Service made recommendations in November 1996 to implement the universal service principles of the act. Among those recommendations were expansion of the Lifeline and Link Up programs for low income consumers, subsidies for rural, insular and high cost service providers, rate discounts for schools and libraries, and creation of an administration to collect the support subsidies from interstate telecommunications carriers and distribute those subsidies to the recipients (FCC NEWSReport No. DC 96-100).

Section 4 -- Duopoly Performance

Scholarship available to date indicates that duopoly markets in the U.S. and the limited oligopoly structure in Germany have shown some propensity to compete. Fullerton (1996) found signs of competitive behavior in every one of the first 28 markets to operate in the U.S., although the results were very idiosyncratic. Prices either declined or rose at rates less than inflation in most markets. Adjusted for inflation, prices decreased significantly--at an annual average rate of 4.26 percent per year. At the end of the seven-year period, the mean of the indexed prices was 22.1 percent lower in constant dollar terms than at the beginning.[6] Indices of price fluctuation and price differences between competitors showed variable results. Stoetzer and Tewes (1996), viewing a rather different situation in Germany, found little evidence of price competition.

Firms in the Fullerton study showed fewer signs of competition on the basis of service quality and enhancements, although these were present as well. Stoetzer and Tewes found indications of substantial competition in the quality and nature of the service provided in Germany. Adams (1990) found no support for his hypotheses concerning either price or service rivalry, although firms just entering the then-young industry changed prices frequently.

Theory suggests that prices under duopoly will be lower than under an unregulated monopoly, but higher than under perfect competition. Not having either real-world model available in a similar industry for direct comparison, it cannot be said definitively that this is the case. It is possible that a regulatory mechanism could have forced real prices down as much or more than the competitive pressures of duopoly. Prices in the California cellular market, the only one heavily regulated at the time, were steady or rising, while prices trended downward in the 25 markets outside of California during the 1985-91 period (Fullerton, 1996).

Fullerton's analysis showed that firms in markets with strong price competition were not likely to also compete vigorously using non-price-related tactics, and vice versa. This is consistent with the theory-based prediction that where price competition is not vigorous, firms are likely to compete in other ways. There is no current theoretical support for the converse, however.

The two-part price structure, with a fixed monthly access fee and a variable usage fee, was nearly universal in the original 28 cellular markets for the period studied. Peak load pricing was also widely practiced, although not primarily as a competitive technique. More likely, but as a tactic to attract business for off-peak hours when there is excess capacity and very low marginal costs.

To the extent that some user classes pay higher access fees, one could say that cross-subsidies may be taking place. The same logic holds on the variable usage fees as well, especially during off-peak hours. To the extent that usage fees exceed marginal cost and are higher than usage fees for other customer classes or periods, they can be regarded as a type of cross-subsidy. Unlike the case of many regulated and monopoly industries, cellular cross-subsidies are voluntary, in return for other apparent advantages for large users.

In some markets, there are signs of either price leadership by one firm or tacit collusion on prices, according to the Fullerton analysis. In some markets, he found price disparities in some classes, but not in others, but no discernible pattern as to which classes are likely to be more or less competitive. In some instances the wireline firm had a substantial head start in the market and was able to sustain higher prices in the face of competition from a non-wireline entrant. This is similar to the Stoetzer and Tewes findings in the German market after it was opened to competition. However in other markets, the first firm to enter cut its prices at the time of entry of the second one.

Policy Evaluations

Returning to the five policy issues presented earlier, here is what the analysis indicates:

1. Is the duopoly structure of the local cellular telephone market likely to increase access to telephone systems to consumers who cannot presently get such access? Can public policy formulators take advantage of cellular market conditions to extend accessibility and pursue the goal of universal service?

There is little evidence at this time that duopoly structure will increase access to the public telephone system, except by general price reduction. Cellular access fees even for small users are high compared to public switched telephone network prices, and the high per-minute prices serve to make total calling costs much higher. This could change, but early research provides no basis for optimism on this policy issue.

Cellular technology could provide access in remote areas where building wireline facilities for scattered customers is costly. Cellular provides an alternate means of providing telephone service, possibly at a lower cost per potential subscriber, especially in sparsely populated areas.

The customary two-part pricing system provides an opportunity to develop special prices and subsidies for consumer segments which have difficulty paying for access to telephone service. One possibility would be to reduce or subsidize access fees for low-

income citizens, then let them pay the variable charges associated with use of the system. At current per-minute prices, this may not seem viable, but as local wireline rates and cellular rates converge, this may become an attractive possibility for public policy purposes.

The sustainability of cross-subsidies between customer groups is unlikely, because one firm will be motivated to cream-skim by undercutting the higher fees of its competitor, in the absence of either collusion or a regulatory requirement to cross-subsidize.

2. Does duopoly structure encourage high quality telephone service?

Experience and theory provide limited insight as to the quality of service. The proliferation of enhancements is an indication of the desire of the firms to improve their service, or at least the public perception of improved service. There are reports that high volume cells in some markets have been chronically overloaded at peak calling hours, causing call blocking rates that would be considered unacceptable in U. S. wireline systems. As traffic builds, this will happen more often, unless cellular firms expand cell sites in busy areas to stay ahead of the peak demand. We can expect that firms which do not increase cell capacity to meet peak demand will lose business to competing firms which are able to do so, but the degree to which that has been happening is unknown.

3. Does duopoly structure serve to encourage innovation and development of the telephone system?

During the period of most available studies, cellular telephone was a young industry. As such, it could be said that both the cellular firms and their customers were innovators and early adopters, in diffusion terminology. The frequency of changes in both prices and pricing plans reflect the willingness of the firms to experiment, hoping to improve their financial and marketing performance. It is unlikely that, without competition, the cellular firms would have offered as many enhancements or pricing plans.

The industry has been slow to move to a digital technology, but that is largely an issue of competing standards. Digitization would use the radio spectrum more efficiently and reduce call blocking rates, as well as address security problems which have been widely publicized. It could be argued that heavier regulation might have resulted in an earlier resolution of this standards problem.[7]

4. Can oligopolistic behavior which is counter to consumer interests be prevented or minimized within a duopolistic environment? Is the observed performance an improvement over the performance of regulated monopolies in the telephone industry?

In those markets rated as having low or moderate competition, firm behavior is often exhibited which would be considered normal for oligopolies (Fullerton, 1996). As noted earlier, there are signs of tacit collusion on prices, as well as price leadership by firms which appear to have market dominance. These are manifestations of the exercise of market power which can be expected in oligopolies. Since, by definition, duopoly is a form of oligopoly, it is hardly to be expected that oligopolistic behavior can be prevented, although to the extent that the firms engage in vigorous competition, perhaps the worst excesses of oligopoly can be avoided. It is difficult to explain, however, why competition seems to flourish in some markets, yet be virtually absent in others, when all have the same market structure. It must be concluded that market structure is probably not the sole determinant of competitive behavior or results.

Thus far in industry history, cellular telephone performance in matters related to public policy is not an improvement over the recent performance of the wireline telephone providers. Prices are much higher, the service quality is no better, if as good, and cellular is less accessible to those of limited means. However, the industry has not yet reached the mature stage where it must appeal to the broadest possible market and price competitively to fully exploit that market. If strenuous competition becomes widespread in the industry, there appears to be no intrinsic reason why it could not match the performance of the wireline industry. It must be remembered, however, that regulators have traditionally required that wireline companies depreciate fixed assets--a major cost component--over very

long periods, which contributed to the apparent low telephone costs, or at least low prices. Cross-subsidies from business and long distance service contributed substantially to low prices for local residential service. Such cross-subsidies are not likely to exist or develop in the lightly regulated cellular industry, as it is now constituted. Indeed cross-subsidies will decrease and eventually disappear in the wireline industry, except as they are perpetuated and supported by provisions of the Telecommunications Act of 1996.

The result may be that, in the future, local phone rates will rise substantially, gradually closing the gap as cellular costs continue to drop or hold steady. The result is likely to be improved economic efficiency, but not necessarily low rates for subscribers of either the wireline or cellular networks, compared to what local telephone rates have historically been in the last half century.

5. Is rate regulation justified or desirable?

Rate regulation in cellular is difficult to justify, based on performance to date. With a well-developed wireline system in place, cellular can hardly be considered a vital service and therefore one requiring regulation. Behaviors of firms and markets reflect market power, but not monopoly behavior. Evidence pointing to collusive behavior or excessive profits is very limited; in fact evidence of competition appears to be stronger than theory-based predictions might suggest. With the general trend toward deregulation in telecommunications, there is no compelling reason to single out cellular for more economic regulation. The only policy objective which might be served by increased regulation is access for those who cannot afford telephone service. While regulation might suggest a solution to the access problem, other means can also be considered that involve less regulatory oversight.

Summary of Findings

1. Duopoly has, in the case of cellular telephone, resulted in local markets which can be characterized as moderately competitive.

2. Prices have quite consistently decreased, when adjusted for inflation. Overall, the decrease has been moderate and gradual.

3. It is reasonable to conclude that price P has been moving toward marginal cost MC, which means that the economic efficiency of local cellular markets is improving.

4. These moderately competitive conditions are not likely to result in a reallocation of resources which will broaden access to the system for those least able to pay, unless cross-subsidies are mandated by law or regulatory authorities.

5. These moderately competitive conditions do, in general, encourage high quality service and technological development.

6. Under current conditions (i.e., a well-developed public switched telephone network and increasing competition from other technologies), there seems to be no pressing reason, either economic or social, to subject cellular telephone service to rate regulation.

7. Because cellular telephone is presently perceived and priced as a premium, nonessential service, pricing issues are important primarily to those who stand to reap the amount of benefit which justifies paying prices which are high compared to wireline service. The 1996 act may change that. As the cost and competitive environments change in the telephone industry, cellular may find itself cost-competitive, especially in the rural, insular or high cost service areas targeted for subsidies by the act. If cellular providers are deemed eligible for subsidies in such areas, they could supplement or supplant wireline service providers. This possibility would place new emphasis on the desirability of competitive behavior, both within the cellular industry and among cellular and wireline providers and any new entrants such as personal communication services.

Public Policy Issues Not Addressed by Duopoly

Although duopoly structure does not address a number of public policy issues regarding phone service, the changing regulatory and technological environment may bring

changes in cellular service which will relate to the issues eventually. Among them are the following:

1. Increased access and further progress toward truly universal service appear to be unlikely to develop in the cellular telephone sector, as in the rest of the telephone industry, in a totally free market environment. Competitive behaviors exhibited do not appear to contribute much to the goal of universal service. By making cross-subsidies more difficult to sustain, the duopoly structure discourages further progress toward broader access and universal service. However, cellular technology may eventually offer a cost-effective substitute to the PSTN which can be utilized by policy makers to increase access, because individual service is inexpensive to provide, once a system is in place, and marginal costs should be low.

The variable component of cellular rates should drop, as the local phone market becomes increasingly competitive, and as the cellular firms depreciate their high initial investments, so firms should become increasingly willing to accept low-income customers for a low access fee, with customers paying the variable fees at regular or reduced rates. Society may be willing to subsidize such service.

At least four possible methods suggest themselves to utilize cellular to increase access to telephone services for low-income customers:

-- A government agency could bid out phone services for low-income users, awarding contracts to the vendors who offer the service for the lowest prices. This could stimulate competition between wireline telephone firms, cellular firms, and possibly firms entering the marketplace with new personal communication network (PCN) systems or cable TV.

-- By direct subsidy, perhaps through a voucher system similar to food stamps, the government could subsidize all or part of the monthly access fee for qualifying citizens. Again, this might be negotiated with the firms to obtain a reduced fee. Firms should realize that this is business which they would not otherwise have, and which adds little to their costs. If the subsidy equals or exceeds the customer's share of the fixed costs, the firms should be motivated to cooperate.

-- By regulatory fiat, the appropriate agency could simply require that cellular firms accept low-income subscribers. The costs would either be included in costs billed to other subscribers, or they could be offset by tax breaks to make the plan more palatable to the firms. There are details to be worked out, but the result would be a cross-subsidy situation not unlike that which existed for decades in the wireline telephone industry.

-- Under the directive of the Telecommunications Act of 1996, the FCC is moving toward a cross-subsidy model which is a variation on the traditional model of long distance services subsidizing local service. The act calls for all interstate telecommunications providers to be assessed to provide the funds necessary to subsidize specified classes of customers and providers. The recommendations of the Federal-State Joint Board on Universal Service, if adopted, would set up the system for administering the cross-subsidies (FCC NEWSReport No. DC 96-100).

2. Increasingly, cellular firms will realize that they are in competition with the PSTN, personal communications networks, and paging systems, and soon cable TV systems as well. The systems are not perfect substitutes for one another, but for many customers, the attributes of the technologies overlap. This increasing competition will provide cross-elasticities for many cellular customers, including those for whom mobility is an important advantage. This will create pressure to reduce prices, and because variable fees are probably well above marginal costs, the cellular firms have room to cut prices as a protective, competitive measure. The reduction of interconnection charges with the PSTN, mandated by the Telecommunications Act of 1996, should assist this competitive response.

3. There is no indication that state regulatory oversight has done a better job in holding rates down than natural competitive forces in duopoly markets. Only one market and two firms in other markets had negative price ratings for the 1985-91 period covered in

the Fullerton study. All were in California, the state that exercised the most stringent regulatory oversight over cellular telephone.

The development and growth of the cellular telephone industry is one indication that the demassification of mediated communication is continuing. Cellular is one more link connecting scattered, individual users--who may be mobile as well--with the global electronic network regarded as telephone service. Demassification is shifting the locus of control to the user and away from mass media or communications middleman organizations.

A new posture for the FCC has emerged, very similar to the bargainer model proposed by Horwitz (1989). Recent activities of the agency do not fit with the capture theory of regulation, or with the concept that the agency must take a comprehensive approach to regulation to protect public interests. Instead, the FCC, working conscientiously within the policies and constraints set by Congress, appears to be trying to balance or broker the interests of the various stakeholders, and regulate only to the point necessary to carry out the agency's mandate. This regulatory model is likely to become more commonplace, as the 20-year trend toward deregulation in the U.S. continues. Regulatory agencies that are not phased out entirely are likely to find that the role of mediator more nearly typifies their position and operating procedures than the traditional, more powerful, role of regulator.

Section 5 - Conclusions and Further Research

As a new technology, cellular telephone has passed through the innovator stage and is probably still in the early adopter stage of diffusion. In these stages of development, any attempt to predict long term market behavior is quite speculative, especially for a technology that will soon have some fairly close substitutes. During these early market periods, the growth rate is normally high, which means that demand curves are shifting and unstable. User behavior, as reflected in market data, is a moving target, and standard communication and economic theory are of limited use in predicting industry behavior.

When technological, political or other factors make a fully open market unfeasible or impractical, duopoly may be a viable public policy alternative. The foregoing study suggests that, consistent with theory, duopoly structure may result in a substantial degree of competitive behavior. Although perhaps not as effective as a fully competitive market, in terms of achieving low prices, duopoly may be at least as effective as a regulated monopoly environment, and result in less misallocation of resources.

It is axiomatic that managements in a regulated industry know more than the regulators about the industry. Therefore, we must conclude that regulation is unlikely to achieve the same efficiency as competitive market conditions. Averch and Johnson (1962) showed how regulation can distort the behavior of monopoly management and result in an inefficient allocation of resources. Danner (1991), cited earlier, lamented that regulators cannot reliably distinguish between competition and collusion in an oligopolistic situation. The more that competition can be induced, the more likely the public is to benefit from prices closer to marginal cost.

Duopoly cannot be seen as an answer to all public policy problems, however. Issues such as provision of universal service, encouragement of innovation, and prevention of misuse of market power may have to be dealt with by means other than market design. The question on these issues may not be whether duopoly fosters a satisfactory degree of competition, but whether competition alone will allow a society to reap the full benefits of the telecommunications infrastructure.

Further Research

Much empirical research remains to be done on the subject of duopolies. The rarity of relatively pure duopoly structure means that opportunities to study it in detail are limited. There may be no other industry where duopoly structure is replicated in a number of

comparable markets and isolated enough to study in a meaningful fashion. The cellular industry, then, is a rich natural experiment for policy analysts and economists to examine.

Although the data are often not available to researchers, the degree of penetration and market share of firms could be significant factors, and their effects should be pursued. Over the longer term, it should be possible to gather data relating prices to the number of users in the market, and build estimates of the demand curves. The data used in studies now available were generated by an industry so young that demand had not stabilized. Therefore, inferences cannot yet be drawn about behavior under long term conditions.

As new technologies such as personal communication networks open up the marketplace, cellular and similar channels offer intriguing possibilities for research on how people communicate, and especially how communication habits are changing. It is an appropriate time to build on previous work concerning uses of the conventional telephone, as well as new uses for the systems which were not possible a few years ago.

The public policy implications of duopoly structure have only been scratched. In many countries, market demand and spectrum limitations may require that other duopolies be created. This is especially likely in Europe, where policy makers are privatizing former government-owned telephone systems, and are experimenting with ways to substitute the marketplace for regulation by permitting competition on a limited scale.

Notes

[1] Some exceptions stand out: See Pool (1977, 1983, and 1990), Short, Reid and other British researchers of the 1970s, Rakow (1992), and O'Keefe and Sulanowski (1992).

[2] See discussions of this point by Farrell (1996), Noam (1995), Noll (1989), and Berg (1993).

[3] Dutton, Blumler and Kraemer (1987) note that new technologies are also decentralizing the media by fostering horizontal communication between users by point-to-point channels. They see this as a democratizing trend, in the tradition of Pool. New media, they observe, allow for asynchronous communication, provide an abundance of channels, and eliminate many transmission barriers. The result, they argue, is a media system more closely resembling the face-to-face communication patterns which predominated before the 19th century.

[4] Peak periods are subject to change with changing habits of usage, and thus peak load pricing norms may change. Recently, evening Internet usage has been clogging up phone networks in affluent residential areas, according to phone company and BellCore officials. The problem is reported to be most severe in California and East Coast metropolitan areas (Internet traffic jam?, 1996)

[5] Research by Mueller and Schement reported by Mueller (1996) as well as comments by other scholars and critics raises questions about the willingness of poor customers to limit phone use and therefore variable charges. The suggestion is made, with some empirical support, that the reason many poor customers drop off the service is that they run up high phone bills which they are then unable to pay.

[6] This is the author's computation, from the 1996 Fullerton study. The U. S. General Accounting Office, using data from the same original source analyzed according to different methodology, estimated that real price decreases (adjusted for inflation) averaged 27 percent in the same period in the same markets (Anderson, 1993). The GAO estimate is possibly more accurate, because the mean PPI in this study is not weighted to reflect the distribution of the consumers under actual market conditions.

[7] The FCC has a mixed record in this regard. Early on, it set the technical standard for FM stereo radio, and commentators suggest that this decision is one of the reasons that FM stereo was so successful. Later on, it declined to set the standard for AM stereo, and the market for AM stereo languished. Some critics argue that by the time AM stereo was developed, the market had passed AM by (Klopfenstein & Sedman, 1990).

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THE INTERNET:

IS THE MEDIUM THE MESSAGE?

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Abstract

The unique features of each medium can change the nature of messages sent by journalists. Does the Internet have unique features and can those features now be measured? This study examines these questions, and provides a comparison of Internet news sites started by newspaper, magazine, television and radio companies. The study found that these sites are making use of interactivity and nonlinear story-telling. Further, newspaper and television sites are taking a different approach to nonlinear storytelling.

"Men are suddenly nomadic gatherers of knowledge, nomadic as never before..."

These words could well describe many of today's media consumers, who select from dozens of television channels, and who sit in front of computer screens, "surfing" the Internet for items of interest. But surprisingly, these words were written more than 30 years ago (McLuhan, 1964, p. 358). Marshall McLuhan's ideas still deserve our attention today, as many of his "predictions" seem to be coming true. International television services can be viewed as a first step in the direction of a "global village." The Internet could be furthering this trend as well.

McLuhan's insistence that "the medium is the message" (p. 7) focused his readers on the newest "medium" of that era, television. Today, we might focus instead on the Internet. If the Internet is "the message," then what effects does this new "message" have? Is the Internet different in some meaningful way from the pre-existing media?

As many differences as the print and broadcast media have, there are some striking similarities as well. Both media are linear. Every consumer receives a story that is presented in one specific order. And with both, the messages travel primarily from communicator to receiver, with limited opportunities

for feedback. Our existing models of mass communication are drawn with these facts in mind.

The limitations of the "traditional media" can be overcome on the Internet. Internet presentations can be linear or nonlinear. Communication can be two-way (interactive). *If this happens,* existing models of mass communication will need to be reworked.

Of course, it's possible that mass communicators will continue with their long-standing habits. The purpose of this study, then, is to find out whether mass communicators on the Internet are changing their thinking about the audience, or if they are sticking with presentations that are linear, and flow in one direction.

Related Studies

By all accounts, Internet use is on the rise. As it grows, the Internet secures its position as a new mass communications medium. Many researchers (Morris & Ogan, 1996) are already willing to say that the Internet is, indeed, a new mass medium. Further evidence of the Internet's acceptance as a medium is a recent nationwide survey's (Stempel & Hargrove, 1996) inclusion of the Internet and other on-line services as two of eleven different media types. That survey, conducted in June, 1995, found that 5.3% of respondents were regular Internet users. However, the researchers seem to downplay the Internet's potential, concluding "We can expect growth in the next decade, but we should recognize that if Internet and on-line services

triple their audiences they will lag the other media" (p. 557). If it takes the Internet a decade to triple its "audience" it will be quite a surprise. It may have already doubled in the time it took that survey to make it into print.

Internet sites (or web sites) can be presented in a "multimedia" or "hypermedia" format. The user selects the items (called "**nodes**") that he or she is interested in. These "nodes" (text chunks, photographs, audio clips, etc.) are held together by "**links**." By choosing which links to follow, the user progresses through an Internet site in a nonlinear manner. One user may read 3 paragraphs, then view a photograph, then listen to an audio clip, the read 4 paragraphs, then finished with 3 photographs. The next user may choose different "nodes" and in a different order. It has been argued (Delaney & Gilbert, 1991) that this nonlinear presentation closely mimics the way human beings think. The human brain, the argument goes, does not operate in a linear fashion, but by "association." McLuhan foreshadowed this argument when he wrote, "It is an important aspect of the electronic age that it establishes a global network that has much the character of our central nervous system" (p. 348).

It can be argued that newspapers are laid out in a nonlinear way. The reader can skip from section to section, reading stories in any order he or she chooses. But individual newspaper stories are linear. To make sense, the reader must start at the beginning, and is rarely faced with options. Radio and television broadcasts are completely linear. As newspaper and broadcast companies move to the Internet (as they are in large numbers) are they using

this new nonlinear style, or are they sticking with linear presentations? Can a trend be observed?

Beyond the question of linearity, the Internet challenges the traditional models of mass communication with its potential for two-way communication. Interactivity has been identified by researchers (Williams, Rice and Rogers, 1988) as the potential driving force towards widespread use of the new media. One study (Newhagen, Cordes & Levy, 1995) found that the mere promise of interactivity was enough to spark interest. A request by NBC News for viewer e-mail prompted thousands of responses. The authors discovered that many of the electronic letters were written in an intimate style, and with the assumption that a response would be forthcoming. Some web sites offer other means of interaction. Users can participate in polls on current events issues with the click of a mouse. Users can input search terms to find information they are looking for specifically. Some sites offer "chat" areas where users can get answers from the web site authors or from other users. Some web sites use electronic bulletin boards where users can post their opinions. One study of these bulletin boards (Rafaeli & LaRose, 1993) found that diversity of opinion was an important factor in bulletin board success. Greater diversity is a possible development if the mass communication process becomes more "two-way." Are journalism Internet sites using this approach? Can a trend in this direction be discerned?

Purpose of the Study

Here, then, are the specific questions investigated by this study:

RQ1: To what degree are journalism Internet sites telling stories in a nonlinear fashion?

RQ2: To what degree are journalism Internet sites using two-way, interactive, communication?

For journalists, this is new territory. How does one tell a story in a nonlinear fashion? How can interactivity be coupled with current journalistic principles? We should it expect to take some time for news professionals to adapt to this new medium. If this is the case, we would expect the older Internet sites to be using interactivity and nonlinearity to a greater degree than newer web publishers. Therefore:

H1: The older the journalism Internet site the greater will be the use of nonlinearity in stories.

And,

H2: The older the journalism Internet site the greater will be the use of two-way, interactive communication.

For McLuhan, the Internet would merely be the latest phase of the "electronic era." That era, beginning with radio and television, is characterized by the immediacy of electronic communication. The immediacy of electronic communication has already been mastered by broadcasters, and many see the Internet as merely the newest "child" of the electronic era (de Kerckhove, 1995). Derrick de Kerckhove (p. 52) predicts "the entire realm of television

will be swallowed by computers." He calls the resulting medium "telecomputers." At any rate, we might expect the broadcast industry to more quickly adapt to this new electronic medium than the print-based media. Therefore:

H3: Internet sites created by broadcasting companies show greater use of nonlinearity than Internet sites created by print media companies.

And,

H4: Internet sites created by broadcasting companies show greater use of interactive communication than Internet sites created by print media companies.

Method

Since the Internet is evolving so rapidly, this content analysis only attempted a snapshot of March, 1997.

The content "universe"

Like cable television, the Internet lends itself to specialization. There are sports sites, business sites, and weather sites, just to name a few. But it is an assumption of this project that people will always rely on journalists to perform the "surveillance" function of mass communication. So this research will focus only on journalism sites that attempt to cover all types of news, not one specialty. There are also Internet sites which collect news items from other sites, or merely provide links to them. We are not interested in these, instead focusing on creators of original content. The field is further

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narrowed to sites that are updated daily (if not hourly), and cover news in the United States. Still, hundreds of sites fitting these criteria were identified with the Internet search engines Yahoo and Lycos (many are local television stations and newspapers). The field was narrowed by restricting our attention to national news organizations. We eliminate all local television sites, and keep only 5 newspapers which have a national focus. Four of those newspaper sites correspond with the top 4 newspapers by circulation. The fifth is an Internet-only national newspaper which claims to be (and appears to be) the first national Internet newspaper. So our content "universe" is limited to U.S. journalism Internet sites that contain *original* material on *general news* topics, updated *daily* , and which are *national* in scope. The 15 sites found are:

Newspaper Sites	Television Sites	Other Sites
www.LATIMES.com	www.uttm.com (CBS)	www.REUTERS.com
www.NYTIMES.com	www.CNN.com	www.TIME.com
www.NANDO.com	www.FOXNEWS.com	www.USNEWS.com
www.USATODAY.com	www.MSNBC.com	www.NPR.org
www.WASHINGTONPOST.com	www1.PBS.org/newshour	www.ABCRADIOnet.com

This "census" includes 5 sites created by newspaper companies, 5 by television networks (MSNBC is joint venture of NBC News and Microsoft Corporation), 2 by magazines, 2 by radio networks, and one by a wire service.

Unit Sampling

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All sampling took place in March, 1997. A sample week was created by selecting every 4th day of March, with a randomly selected start of March 6th. Each of the 15 sites was visited once on each of those seven days between noon and midnight eastern time. Care was taken to vary the time of day for each site visit throughout the month, although this was not a rigorous probability sampling. 635 story titles were viewed, although links to 2 were invalid and were not included in the study. 633 stories were coded.

Theoretical variable definitions

Coders measured story nonlinearity and site interactivity. A nonlinear story is one that goes in a variety of possible directions, according to the interests and needs of the media consumer.

An interactive site is one that accepts input from the media consumer, and creates opportunities for that input.

Operational Definitions & Units of Observation

The entire Internet site was the unit of observation for **interactivity.** Coders looked for the availability of e-mail to the organization, e-mail to individual journalist, user polls, news search options, question and answer forums, and the publishing (posting) of viewer comments. Each counted as one point (maximum of one point), for a total score ranging from zero to six.

Individual stories were the units of observation for the measurement of **nonlinearity**. Each site's front page stories were coded. Some sites put no stories on their "main" page, offering a menu of sections instead. In these cases "top stories" was selected, if available, and if not, the front page of the national news section was coded. Stories which appeared in identical form (usually special reports) on subsequent coding days were counted only once. Internal links (if any) within each story were counted. A completely linear story, with no optional links, received a score of zero. Every optional link the story does contain counted as one point, although secondary links (and beyond) were not counted. Links which merely continued the story onto another page were not considered "nonlinear" links and were not counted (this technique was rarely used). One site (U.S. News) presented identical stories day after day, with the only significant change being the number of links. In this case, the story was counted only once, and a median number of links recorded.

At the conclusion of the seven pre-selected sampling days, means were calculated for nonlinearity and interactivity for each site.

Pre-test and reliability

A pre-test with two coders was conducted for each variable. On site interactivity, coder agreement was 91.7% (by Holsti, 83.3% by Scott's pi). For story nonlinearity, coder agreement was 99.9% (by Pearson's r).

Results

Nonlinearity

RQ1: To what degree are journalism Internet sites telling stories in a nonlinear fashion?

The 15 sites varied widely in their use of nonlinear stories, but most (12) of them did use at least some nonlinear stories. The following chart lists them from highest to lowest links per story.

Internet Sites	Front Page Stories/Mean	Percentage of Nonlinear Stories	Links Per Story/Mean
Online Newshour	2.0	100	10.8
U.S. News	1.9	77	10.2
CNN Interactive	4.0	96	9.9
MSNBC	3.1	100	8.0
Washington Post	3.1	100	6.8
NY Times	6.6	85	3.5
USA Today	6.6	15	0.5
Reuters	5.0	17	0.3
LA Times	8.4	10	0.3
Nando Times	20.0	9	0.3
Fox News	5.0	14	0.2
Time Daily	5.9	2	0.1
CBS: UTTM	5.3	0	0.0
NPR	5.7	0	0.0
ABC Radio	7.9	0	0.0

Site mean=3.4

The 15 sites averaged 3.4 (SD=4.38) links per story. But the distribution is bimodal, with the top six sites average more than 8 links per story, and the remaining nine averaging less than 0.2 links. Is this a significant finding? If traditional print or broadcast stories were measured for nonlinearity they would have to score at or near zero, since the reader or viewer is rarely faced with options (within the story). Similarly, most of the Internet sites studied

score near zero, but some (6 of 15) are making significant use of nonlinear storytelling.

There are a wide variety of approaches, from the radio sites which present all stories linearly, to MSNBC and the Washington Post which present no front page stories linearly. The sites with highly-linked stories tend to present less stories on their front pages than sites with simple, linear stories.

Interactivity

RQ2: To what degree are journalism Internet sites using two-way, interactive, communication.

As with nonlinearity, the 15 sites have very different approaches to interactivity. The following table lists the sites from the most to least interactive.

Internet Site	Interactive Features
LA Times	5
MSNBC	5
NY Times	5
Washington Post	5
CNN Interactive	4
U.S. News	3
NPR	3
Online Newshour	3
USA Today	3
Fox News	2
Reuters	2
Time Daily	2
ABC Radio	1
CBS: UTTM	1
Nando Times	1

Mean=3.0

On an interactivity scale of 0 to 6, the 15 sites studied score an average of 3.0 (SD=1.51). While this is not surprisingly low or high, we must consider the interactivity of the traditional media. By themselves, newspapers, magazines, television and radio would score a zero on our 0 to 6 scale. There is no potential for two-way communication with these media. Another carrier (telephone, postal service, etc.) is required for the traditional media to become truly interactive. Even in that situation, the interactivity is delayed, and has no impact at the point of message consumption.

Age of the sites

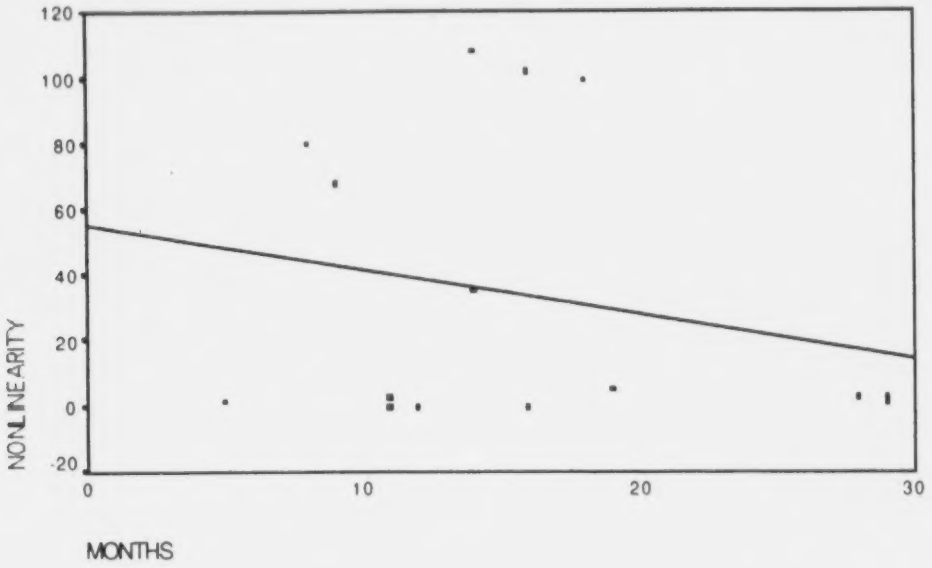
Many methods had to be used to determine the age of the 15 web sites. A few provide the information on the Internet site. Although every site has an e-mail address, only about half responded. The ages of the remaining sites were determined through direct calls or, in a few cases, through archived news reports. Internet staff sizes were also sought, but many companies consider this a "business secret." The following chart lists the sites from the oldest to the newest. The date of Internet availability was used to determine age (as of March, 1997).

Internet Site	Staff Size	Months on Web
Nando Times	50	29
Time Daily		29
Reuters		28
USA Today	80	19
CNN Interactive	100	18
US News	8	16
NPR	5	16
NY Times	45	14
Online Newshour	5	14
CBS: UTTM	0	12
LA Times	22	11
ABC Radio		11
Washington Post	43	9
MSNBC		8
Fox News		5

The first two hypotheses involve correlations between the age of the 15 sites and the two test variables. P-values are not reported because the 15 sites do not represent a probability sample, rather it is argued that they represent a "census" of all sites meeting the study's criteria (however, when calculated, the P-values are more than .05).

H1: The older the journalism Internet site the greater will be the use of nonlinearity.

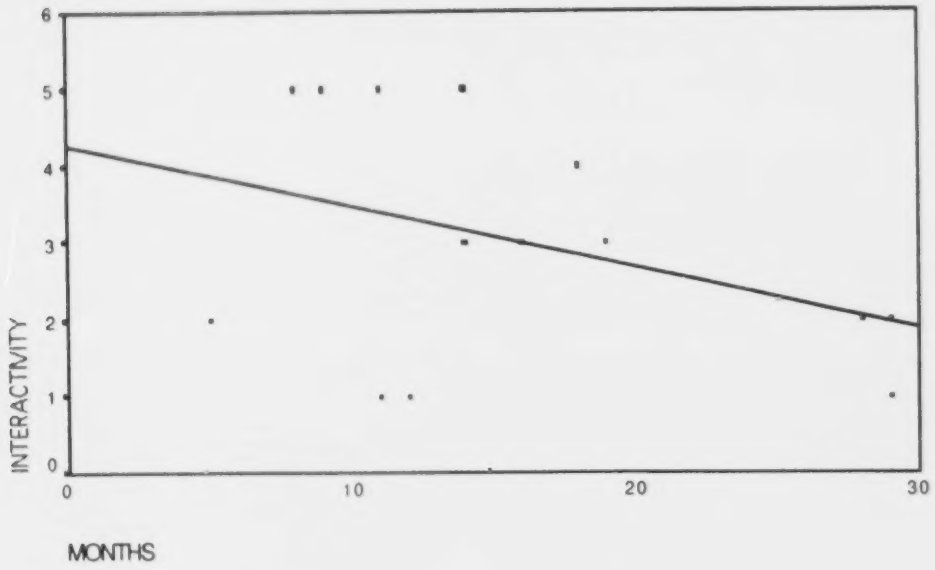
There is little correlation (r=-.24) between the age of the 15 sites and their degree of story nonlinearity. What little correlation there is runs counter to the hypothesis. The regression line on the following scattergram depicts this tendency.



So, hypothesis one is not supported.

H2: The older the journalism Internet site the greater will be the use of two-way, interactive communication.

The result reported for hypothesis one is more pronounced when we look at hypothesis two, the relationship between interactivity and the age of the 15 sites. In this case we get a stronger correlation (r=-.40), and it also runs contrary to the hypothesis. The following scattergram shows that the newer sites are generally the more interactive sites.



So, hypothesis two is not supported.

Print versus Broadcast Sites

H3: Internet sites created by broadcasting companies show greater use of nonlinearity than Internet sites created by print media companies.

There are two ways to run the t-test for nonlinearity. One is to compare between media at the unit level of "story," the other is to compare at the unit level of "Internet site." The two methods yield similar mean differences, but with differing significance levels (again, at the site level the test of statistical significance could be considered inappropriate). The table shows results of both measuring methods.

Print	Broadcast	Mean links: Print	Mean links: Broadcast	Mean Diff.	t	df	p
367 stories	231 stories	1.45	2.67	-1.19	-3.17	338	=.002
7 sites	7 sites	3.10	4.13	-1.03	-.42	12	=.68

The data supports hypothesis one. The broadcast sites average more than an additional link than the print sites. The gap is much wider when comparing the 5 newspaper sites to the 5 television sites.

Newspaper	TV	Mean links: Newspaper	Mean links: Television	Mean Diff.	t	df	p
313 stories	136	1.26	4.49	-3.22	-6.19	169	<.001
5 sites	5 sites	2.28	5.78	-3.50	-1.30	6.17	=.24

The gap averages more than 3 links per story. The newspaper sites are putting more stories on their front pages, but using a lesser degree of nonlinearity.

H4: Internet sites created by broadcasting companies show greater use of interactive communication than Internet sites created by print media companies.

This hypothesis is not supported. In fact, the print sites are slightly higher in interactivity than the broadcast sites, although the difference is small. The print sites average 3.43 on the 0 to 6 scale, while the broadcast sites average 2.71, for a mean difference of .71. Comparing the newspaper and television sites directly yields similar results. The newspaper sites average 3.80, while the television sites average 3.00, for a mean difference of .8.

Additional Findings

After the 633 stories were coded for nonlinearity, it was thought that some investigation of the stories' content might be illuminating. Initial study identified 14 story categories. An intercoder reliability pre-test on those

categories found 88.3% agreement (Scott's pi). Here are the ten stories most represented in the sample:

Story Topic	#	Story Topic	#
Campaign Fundraising	41	Midwest Flooding	20
Mideast Peace	37	Cult Suicides	18
OK City Bombing	27	Zaire	16
Russia/Yeltsin	23	Clinton's Knee	12
Albania	21	CIA Nomination	11

This list might mirror the March coverage one would find in the traditional media outlets which run the sites, but that measurement was not part of this study. However, it is interesting to note which of these stories receives the most nonlinear "treatment" by the sites' designers. The Cult Suicide stories received the most attention, getting at least one link half the time and scoring the highest mean number of links. The following table shows the breakdown:

Story	% of time linked	Mean links
Cult Suicides	50% (9/18)	4.8
Campaign Fundraising	46% (19/41)	4.1
Mideast Peace	46% (17/37)	4.0
Clinton's Knee	42% (5/12)	4.1
CIA Nomination	36% (4/11)	1.5
Midwest Flooding	35% (7/20)	2.4
OK City Bombing	33% (9/27)	2.9
Albania	33% (7/21)	2.0
Russia/Yeltsin	17% (4/23)	1.7
Zaire	13% (2/16)	1.1
All Stories	**27% (170/633)**	**1.8**

We can speculate on the reasons for these findings. Clearly, the Cult Suicide story is a good fit for Internet news sites. The cult itself operated at

least two web sites and many of the Cult Suicide stories in our sample included links to those pages. The reasons for other stories being such "nonlinear favorites" are less clear. The Campaign Fundraising controversy is an on-going story and thus provides page designers with dozens of links to previous stories. The same is true for Mideast Peace. It's not true for the Clinton Knee story, but that event presented numerous angles for linkage. It's a medical story (focusing on the injury and operation), a sports story (focusing on golfer Greg Norman who witnessed the injury), an international story (focusing on the upcoming summit with Yeltsin), etc. If Internet journalists begin to focus on these linkage considerations, nonlinearity could begin to drive the new medium.

Interactivity versus Nonlinearity

One additional finding that was not among of the original hypotheses concerns the relationship between our two dependent variables, interactivity and nonlinearity. There is a strong relationship ($r=.628$, $p<.05$) between the interactivity of a site and the total number of links on the front page. This suggests that sites aren't making a choice between interactivity and nonlinearity, but are pursuing both (or neither).

Summary and Conclusions

Media companies with Internet news sites are taking different approaches to the new medium. Newspaper sites have more stories on their front pages

(about 9), than television sites (about 4). But television sites are paying more attention to nonlinearity. The typical television-run site has stories with nearly 6 links, while their newspaper counterparts have just over 2 links per story. Our hypotheses that experience with the medium will lead Internet news sites toward nonlinearity and interactivity could not be supported with this "snapshot" study. In fact, in this study, the newer sites rated higher, particularly on interactivity. A longitudinal study will be necessary to discern a trend.

This content analysis was used to determine how media companies are using this new medium, not to measure their success at pleasing the Internet "audience." A study which measures the importance of interactivity and nonlinearity to news consumers would be useful.

It was an assumption of this project that most media companies (in March of 1997) with an Internet site were taking material from their newspaper or broadcast newsrooms, and putting it directly on the Internet. The editorial content would then be similar to their traditional product. However, if interactivity and nonlinearity begin to drive the medium, we would expect to see content affected.

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Abstract: This paper examined the impact of current Internet technology on grassroots-level democratic development in China. Methods employed included actual web observation as well as interpretive content analysis. Although this study concluded that the Internet does not itself wield an inherently irresistible democratizing force, it determined that the virtual classroom created by the Internet that is otherwise unavailable to the Chinese people allowed for the "seeds of democracy" to be kept alive and cultivated through the continual exchange of ideas and information.

Flying Freely but in A Cage
-- An empirical study of the potential effects of the Internet on democratic development in China

Overview

In the 1950s and 1960s, development scholars such as Daniel Lerner and Everett Rogers defined development as "a type of social change in which new ideas are introduced into a social system in order to produce higher per capita incomes and levels of living through more modern production methods and improved social organization (Rogers, 1969: 18)." Modernization, or the "development" of the individual, was seen as "the process by which individuals change from a traditional way of life to a more complex, technologically advanced, and rapidly changing style of life (Rogers, 1969: 48)."

Today, however, development as a complex and multifaceted process goes far beyond the primarily quantitative frameworks. Developmentalists began to be aware that rising GNPs and per capita income do not necessarily lift the population at large out of poverty; even in societies that enjoy general economic prosperity, a majority of the people, especially women, may still be politically, socially, and economically oppressed. As a result, "another development," that is, the pursuit of the guarantee of human rights, access, participation and democracy, have been put on agenda since the 1980s (Jayaweera, 1987: 78). Being called for are those political, social and economic reforms that will ensure equity and guarantee an environment in which all human beings may attain their highest potential (Ibid). Development, therefore, some scholars argued, should not simply involve the transfer of technology but should also involve the free and open dialogue of democratic ideas and principles thus liberating people from the shackles of forced silence and freeing them to make relevant plans and meaningful decisions regarding their own development (Hedebro, 1982; Melkote, 1991).

Democracy, as Leo Bogart said, is hard to define since "no single political system can lay exclusive claim to the term and it is not at all certain that we know it when we see it (Bogart, 1996)." All democracies, however, do share certain vital precepts such as open debate, sufferance of unpopular opinions, and decisions reached by honest voting and thereupon accepted (Ibid). These features closely mirror the tenor of Frederick W. Frey's concept of "political development" -- a unique configuration within a society

that "features wide distribution and great reciprocity of power. It is the opposite of autocracy (Frey 1963: 298)."

As channels for the dissemination of modern ideas and practices, mass media have been seen as integral in the process of social transformation. Mass media's role in the national development process, many believe, is to act as innovators and mobilizers of transformation, changing old habits and fostering new ethics (West and Fair, 1993: 91). Some studies reported examples of the impact of mass media such as television, broadcast and video on programs of national development like family planning and retaining cultural identity in developing countries (Kincaid et al, 1992; Aufderheide, 1993).

Nevertheless, some scholars have expressed their doubts about the relevance of new communication technologies to democratic development in developing countries. It was found that democracy and development might not be compatible. For example, authoritarian leaders in some Asian countries such as China, Indonesia, Malaysia and Singapore have successfully implemented market-oriented economies with no discernible trend toward democratization. It is firmly believed by these leaders that heavy-handed restrictions on political rights and civil liberties are necessary to promote stability and growth (Graybow, 1995). In his 'Electronic Democracy: An Indian Perspective,' Ammu Joseph explores the questions of not only how new communication technologies--especially the electronic media--can contribute to the democratic process, but whether or not such contributions are even possible. He asks: Who controls the airwaves? Who will get to represent the public? Who can have access to broadcasting from within India (Joseph, 1996)? His findings tell us that the current consumerist orientation of television, which leaves the majority of the Indian population out in the cold, is likely to be reinforced. "As a result, television in India today is not only not an agent of empowerment, it actually contributes towards the further marginalizaiton and disempowerment of the vast majority of the country's citizenry (Ibid. 65)." Joseph's conclusion was that "technology per se appears to be a not very important factor, and far from being a determinant, compared with political will and social purpose" in democratic development (Ibid. 67).

With the advent of the Internet, some scholars have begun to examine the role this new communication technology may play as a mass medium (Morris and Ogan, 1996) in promoting democracy. They hold high hopes for the Internet as an agent of social change, and reiterate one of the viewpoints from the dominant paradigm of development that modern technology would create a modern

environment. For instance, Joseph Nye and William Owens, former Clinton administration Defense Department officials and authors of *America's Information Edge*, maintain that information technology has an inherently democratizing force, one that is almost impossible to resist (Teachout, 1996). We also hear such opinions that "[w]ith a PC and a modem as his or her new mouthpiece, the citizen of the twenty-first century will enjoy a democracy simply inconceivable to earlier generations of the disenfranchised and oppressed (Hirschkop, 1996)." These scholars believe that the Internet, with its open access to any form of specialized knowledge, represents a new form of egalitarian democracy.

But *does* the Internet technology inherently serve democracy and foster the dissemination and exchange of ideas and information? And in a tolerant spirit? Such questions may not have simple answers. Mass communication, as Bogart argued, on the macro-level, does help in the worldwide diffusion of democratic ideas (Bogart, 1996). But, what about potential manipulation by political authorities motivated by ideological considerations or crude self-interest? What will these leaders do when economic forces limit their resources, their variety and their integrity? What does this new communication technology (NCT) mean to those netizens of Third World countries? The question of whether the Internet is inevitably an agent of democracy still exist.

Today, less developed countries (LDC) all over the world are enthusiastic about the Internet technology. China, as the last major communist citadel, has also been active in adopting this NCT. However, China has not allowed America and other developed countries to easily project the appeal of their ideals, ideology, culture, economic model, and social and political institution. Since the April 5th Movement of 1976, in which the general public in China publicly expressed for the first time their dissatisfaction toward the totalitarian ruling of the communist regime over its people, the Chinese Communist Party (CCP) has regarded the word democracy as a taboo, willingly, eagerly, and submissively surrendered the "laurel" of democracy to the West, and criticized democracy as "spiritual pollution" from the West. Since then, from Xidan Democratic Wall Movement at the end of the 1970s to the suppressed student movement in 1989, democratic movements have always been spontaneous bottom-up mass movements in China. Since the mass media are all owned and controlled by the CCP, the public have used wall paper, which was outlawed at the beginning of the 1980s, as a major form of "mass" communication to exchange idea, disseminate information, and later press the government for political reform.

Because of such historical background, this paper is intended to examine the impact of diffusion of the Internet technology on the development of democracy in China on the grassroots level. I am interested in finding out how ordinary citizens have used the Internet--a legal virtual wall paper in the information age--to promote democratic development and to continue their fights in the old days for democracy, how their self-expressions and discussions have been politically framed both by netizens themselves and by the Internet services providers (ISP), which are usually state-owned enterprises, and whether this new technology has an inherently democratizing force in China.

The Internet technology is relatively new all around the world, and it is just approximately 3 years since it was open to the general public in China in 1994. A wide search both in hard-copy academic journals and in electronic media such as Lexis-Nexis and WWW shows that literally no study about the uses of the Internet in programs of national development in China has been done so far. This paper is an exploratory study in this field.

Methods

My research methods for this paper include a combination of web observation appropriated from the field observation method often used in anthropological studies and interpretive content analysis of actual posted messages. Thanks to the high-tech nature of the Internet, any observers can easily get access to the public information out there on the network. Bulletin board systems (BBSs) are usually the only space on the Chinese networks where idea exchanges and information dissemination occur in the public domain and can be observed. Therefore, I have used as my observation objects BBSs based in China as well as one BBS based in the US but accessible to the netizens of China. The content of the observations includes the set-up of discussion topics, the per day average number of messages posted to the discussion groups, the discussion rules, the attitudes and approaches of discussions, the content of discussions, and the webmasters' possible censorship of discussions.

The purposive sampling of the web sites studied was based on my pre-web-search together with the information provided in Zhu Qiang's 'Latest Development of the Internet in Mainland China.' The pre-web-search found 28 domestically based Chinese BBSs. They mainly fall under two categories: university BBSs and commercial BBSs. Since most BBSs contain huge data, it is impossible to make thorough

observations in all of them in the limited time of one university semester (This was originally a university term paper). Therefore, I have selected the following five:

1. BOL Teahouse from Beijing On-line based in Beijing;
2. Free Market from Bamin Netcity based in the southern province of Fujian;
3. Deep Feeling on the Net (Yiwangqingsheng) from ShenzhenNet based in the southern city of Shenzhen;
4. Richtalk Forum from Stone Richsight based in Beijing; and
5. Walton Club from Walton InfoNET, an America-based ISP.

The first three BBSs listed above are affiliated with ChinaNET. In another word, they are directly or indirectly controlled by the government. Stone Richsight is a privately owned joint venture, therefore, it has more latitude in operating its BBS. Not much is known about Walton Co. because the web page that was supposed to reveal information about this company was under construction during the period of my observation. According to the brief information provided by the webmaster of its Chinese Discussion Forum, Walton was run by a privately owned America-based computer company (ABC, 11/19/1996 at 10:09:32).

The two selection criteria for the Chinese BBSs were 1). they were from commercial ISPs, in other words, they were designed for general public and not only for social elite in universities or academic institutes; 2). they were technically observable on the Internet from the location of my study--Bloomington, Indiana. Walton Club was selected because many people from mainland China were found to be participating in its discussions. Walton Club was also expected to work as a control group to make it possible for some comparisons to be made between the China-based and America-based BBSs.

This study has purposely chosen not to include any university-run BBSs simply because university students' speeches are usually not representative of general public's opinions (Iyengar and Kinder, 1987). It is suggested that they be included in future studies so as to make another layer of comparisons between the academic type BBSs and commercial type BBSs.

Observations listed in this study were compiled between October 18, 1996 and November 28, 1996.

Calculation of per day average number of messages posted give us a general sense of the extent of participation and what topics netizens are interested in under the current configurations of BBS designs. Even though I was aware of the fact that some messages had been censored by the webmasters (certain suggestive censorship messages and complaints posted by some of the participants made that clear) on four

of the five BBSs, I am convinced that this censorship did not affect the precision of actual count. The mechanism by which messages would be posted to some of these BBSs is as follows: a message is sent to the BBS and listed within minutes. If the webmaster was not satisfied with the posting for some reason, it would be deleted though the title of the massage was left. If someone clicked on the hypertext of the title, a message line would appear which read "file not found." Since Deep Feeling on the Net had too many sub-groups to count in the limited time, I selected the sub-groups in the first two groups as a convenient sample of all the sub-groups. Free Market was a one-group BBS and all discussions were directed to that one group. As a result, the average number of messages per day was comparatively high. I presumed it was inappropriate to incorporate it in such comparisons, therefore, the discussion of its per day average number of message was excluded.

The unit of textual analysis of discussion content was each posted message, and the unit of textual analysis of discussion rules was each BBS. The topics observed on the BBSs were labeled into two parts: hard topics and soft topics. Hard topics refer to topics like politics, democracy and current affairs while soft topics refer to discussions of entertainment, sports, hobbies, arts and social contact, etc.. The analysis of hard topic discussions on the BBSs are the focal point of this paper. Since BBS content changes day by day as well as between BBSs, it is not my intention to extend the validity of this study to future web content or to content in BBSs not chosen by this study. The major purpose of this study is to describe the potential impact of the Internet--a recently introduced mass medium--as an agent for democratic development in the early days of its diffusion in the context of the communist government of the People's Republic of China.

What is currently happening in China may not be representative of the situations in other LDCs like India, Egypt or Mexico because of the apparent ideological differences. However, whatever major changes do occur in China may affect the lives of a quarter of world's population, and will, directly or indirectly, affect the entire world economically and politically. Therefore, examining how the Internet is affecting the democratic development in China has an axiomatic strategic significance.

Findings

BBSs are a comparatively new phenomenon in China. The earliest Chinese BBS found, established in late April of 1996 according to the dates of the messages posted, was "Deep Feeling on the

Net" from ShenzhenNet. This BBS was the first BBS on ChinaNET, the backbone network for all of China. All other BBSs were less than half a year old up to the end of November 1996, the date of this study's completion. My web search showed that none of the home pages of the major Chinese networks such as ChinaNET, CERNET (China Education and Research Network), and IHEP (Institute of High Energy Physics) contained a BBS. All the China-based BBSs were found to be located in local networks affiliated to those major networks. In fact, of all the nearly 100 universities linked to CERNET, only 9 of them were found to have a BBS.

Almost all postings were in Chinese characters except for a designated English discussion group on Walton Club. Table 1 shows that there were three times as many postings to the Chinese discussion forum in Walton Club as there were to its English counterpart. These findings obviously indicate that most discussions took place between Chinese people themselves. Following are the categorical findings from the five BBSs.

Table 1: Per day average number of messages in different discussion groups on the five BBSs

BOL Teahouse			
Discussion groups	Duration of messages posted	Number of posted messages	Per day average number of messages
Life	09/28/96-11/17/96	57	1.1
Sports	10/10/96-11/17/96	5	0.1
Arts	10/14/96-11/17/96	6	0.2
Public opinions	10/03/96-11/17/96	3	0.1
Business	10/03/96-11/17/96	2	0.04
Games	10/14/96-11/17/96	8	0.2
Other	10/14/96-11/17/96	4	0.1
Grand mean			**0.3**
Deep Feeling on the Net (Yiwangqingsheng)			
Discussion groups	Duration of messages posted	Number of posted messages	Per day average number of messages
BBS related discussions (3)			
Novice's area	05/03/96-11/23/96	616	3
BBS Station affairs	06/06/96-11/23/96	311	1.8
Test area	09/09/96-11/23/96	334	4.4
Leisure and Entertainment (11)			
Auto	05/03/96-11/23/96	205	1
Empress (sic) (meaning "Martial arts")	05/06/96-11/23/96	456	2.3
Hi-Fi Fans	05/18/96-11/23/96	75	0.4
IQ	06/06/96-11/23/96	537	3.1
Joke	04/30/96-11/23/96	286	1.4
MUD	07/10/96-11/23/96	777	5.7
Marvel	05/19/96-11/23/96	84	0.4
Military	05/02/96-11/23/96	239	1.2
MJ (a gambling poker)	05/09/96-11/23/96	41	0.2
Movie TV	05/29/96-11/23/96	152	0.8
Rock	06/26/96-11/23/96	59	0.4
None of the other 9 groups containing 44 sub groups was sampled			

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Grand mean of the sampled groups			**1.9**
Free Market			
Discussion groups	Duration of messages posted	Number of posted messages	Per day average number of messages
N/A	10/29/96-11/17/96	174	**8.7**
Richtalk Forum			
Discussion groups	Duration of messages posted	Number of posted messages	Per day average number of messages
I am on-line today	10/25/96-11/17/96	454	18.9
Sports Salon	08/15/96-11/23/96	225	2.2
Musical Paradise	09/30/96-11/23/96	186	3.4
My inborn talent	09/23/96-11/23/96	211	3.4
Computer Hackers	11/11/96-11/23/96	287	22.1
PC Games	09/26/96-11/23/96	641	10.9
Art Corridor	08/19/96-11/23/96	39	0.4
Free talk	11/06/96-11/23/96	300	16.7
Grand mean			**9.8**
Walton Club			
Discussion groups	Duration of messages posted	Number of posted messages	Per day average number of messages
English Discussion Forum	10/03/96-11/18/96	376	8
Chinese Culture Workshop	09/30/96-11/18/96	17	0.3
Chinese Discussion Forum	10/20/96-11/18/96	807	27
The Inner World of Chinese	09/30/96-11/18/96	78	1.6
Net Culture	09/30/96-11/18/96	41	0.8
Fun on the Net	09/30/96-11/18/96	221	4.4
Big5 Chinese Discussion Forum	07/15/96-11/23/96	302	2.3
History and Philosophy Workshop	09/30/96-11/23/96	9	0.2
Grand mean			**5.6**

The set-up of discussion groups and topics

The set-up of discussion groups or topics varied greatly from BBS to BBS. BOL Teahouse, Richtalk Forum and Walton Club had comparatively fixed discussion groups, each having seven to eight groups. Free Market, less than one month old when I began my observation, was a one group forum. On November 28, the last day of my observation, however, its newly designed web pages began to be used and seven discussion groups were found on there. Deep Feeling on the Net continuously created new discussion groups at the request of a minimum number of participants. That is why Deep Feeling on the Net had the most lengthy list of discussion groups: at least 58 sub-groups (see Table 1).

Soft topic groups took a major share of all the groups on these BBSs except for Walton Club. Groups for people to engage in discussions of hard topics were rare. Public Opinions from BOL Teahouse, Humanity and Society from Deep Feeling on the Net, and Discussion Forum from Walton Club appear to be the groups for such hard topic discussions.

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Per day average number of messages

According to the grand means in Table 1, Richtalk Forum based in Beijing attracted the most participants as a BBS (9.8 messages/day) while the Chinese Discussion Forum (whose Chinese name was Current Affairs Forum) in Walton Club had the most participants as a single discussion group (27 messages/day). In Richtalk Forum, the most participated group was Computer Hackers (22 messages/day). I Am On Line Today and Free Talk are two pretty open names that can accommodate a large number of topics. Actually both of them contained a few hard topic discussions. Their per day average number of messages posted (18.9 and 16.7) were way above the rest of the groups in Richtalk Forum. BOL Teahouse, on the other hand, had the lowest number of people participating in discussions. All seven groups in BOL Teahouse had extremely sporadic discussions (0.04-1.1 messages/day).

As far as hard topic groups based in China are concerned, Public Opinion from BOL Teahouse had only 3 postings in the 46 days of its existence. One message titled 'ChinaNET=monopoly' complained about the high fees charged and poor services provided by ChinaNET (zj 18:18:16 10/03/96). More than ten attempts (at various times of different days) to contact the Humanity and Society group from Deep Feeling on the Net demonstrated clearly that this group literally did not exist. A couple of participants in the Free Talk group on Richtalk Forum vented their dissatisfaction toward the CCP.

For whatever reason, the per day average number of postings in BOL Teahouse (0.3 message/day) and in Deep Feeling on the Net (1.9 messages/day), which were directly controlled by the government, were much lower than those of the non-government-controlled BBSs.

Discussion rules

The observation of discussion rules can give us a general idea of what discussion attitudes and approaches are expected by an ISP. Potential comparisons can be made between what is expected and what is done. Table 2 shows that the first three government-controlled BBSs gave either explicit or implicit warnings that political discussions were dangerous. People were expected to stay away from any discussions of politically sensitive topics which may readily be regarded as counter-revolutionary or damaging national interest. What was also implicitly or explicitly expressed by these rules was that

participants should be prepared for censorship if what they said was not to the webmasters' liking. What was most ironic was that Free Market, being so named, allowed no free chats about politics.

On the other hand, Richtalk Forum and Walton Discussion Forum were quite similar in their approach to discussion rules. For example, discussions about politically sensitive topics were not discouraged, at least by the rules themselves. Only general guidelines regarding potential participation were given.

Combining Table 1 and 2, it is easy to see that BOL Teahouse and Deep Feeling on the Net, both of which discouraged political discussions, had relatively low per day average number of messages posted (0.3 and 1.9 messages/day). On the other hand, Richtalk Forum and Walton Discussion Group, which seemed liberal, had a comparatively higher number of discussions.

Table 2. Discussion rules of the five BBSs

BBS	Rules
BOL Teahouse	You can publish what you think and what you act, but don't forget that there are here many quite good audience and net members who might become your friends in the future (sic). Show more of your humor, wit and extraordinariness. It is necessary that you leave an unforgettable impression to others. By the way, you'd better not publish any political speeches here.
Deep Feeling on the Net	1. Don't post any articles that involves sex, counter-revolution, and damages national interest; 2. Don't post any articles that defame, hurl invectives and engage in personal attacks; 3. Don't open more than one account lest the system be overloaded; 4. Please publish your articles in corresponding discussion areas and don't re-post to multiple areas. Any articles that violate the rules will be censored. Serious violators are subject to legal suit.
Free Market	"Free Market" provides you a place for free chat! Please do not touch politically sensitive topics! (After its web pages were redesigned on November 28, 1996, the following message was added) BBS--Free Market welcomes everyone to come here and have casual chats. Warning: publishing any speeches against the Constitution is strictly forbidden!"
Richtalk Forum	Have more sincere exchanges of ideas, and have less malicious wrangling; Have more understanding and respect, and have less mean verbal thrusts; Have more support and care, and have less sensitive extremes; Have more mutual help, and have less mutual apathy; The growth of the forum is strongly tied to your participation, please treasure it.
Walton Discussion Forum	1.Do not post an article with a long title. 2.No personal flamming and verbal abuse. 3.Foul languages and pornography are not allowed.

Note: all these discussion rules have been copied from each BBS's home page.

The attitudes and approaches of discussions

In spite of the rules of no personal flamming, foul languages, mean-spirited verbal thrusts, malicious wrangling, etc., such languages were seen often on all five BBSs, though severity and graphic

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nature of the language was higher on Walton Club and Richtalk Forum. If there were any patterns as far as discussion attitudes and approaches were concerned, the following four "rare's" may describe them all.

1. Rare real names. In all the five BBS stations, no real name was ever required for discussions. As a result, almost everyone used a unique alias such as Mass I, Justice, Sharp Eye, or Amolin. Sometimes a participant would refuse to include a name of any kind. No real e-mail address would be included with any postings. Because of uses of alias and because of the manner in which a BBS is designed, participants could make personal attacks or spout invectives without being identified or taking any responsibility. Some participants even appropriated other participants' aliases in order to write articles against still other's thus defaming them in complete anonymity.

2. Rare sincerity or seriousness in exchanges of ideas. For example, someone named Justice proposed on Walton Discussion Forum: "Let's turn this place into a playground. There's no time for rational discussions. One liners on the subject title with no content are especially welcomed (10/15/1996)." Such examples were too many to list.

3. Rare respect for other participants. Those who showed any seriousness would be especially assaulted by personal attacks, satire or verbal thrusts. Frequent antagonism replete with foul language was often observed. For instance, participants from mainland China made continuous efforts to dispel Taiwanese who often used militant language or obscenities on the Walton Discussion Forum.

4. Rare hard topic discussions. Suggestions to avoid political discussions were found more than once on Richtalk Forum and Free Market. One participant warned: "We'd better not talk about politics on the net lest there should be unexpected result ..... 10/29/1996 at 07:27:45)." The vast majority of participants engaged in soft topic discussions.

The content of discussions

Hard topic discussions, especially those of the politically sensitive nature were few and not found on all the five BBSs. Most hard topic discussions were found in the Chinese Discussion Forum on Walton Club. A few censored discussions about politics and democracy were also found in Free Talk on Richtalk Forum and in Free Market. BOL Teahouse and Deep Feeling on the Net were almost free of such discussions.

Discussions of politically sensitive nature were literally open and un-restricted in Walton's Discussion Forum. It is a little inconceivable that such a BBS could be accessed in mainland China. A secret document produced by the Beijing Municipal Communist Party Committee describing the need to crackdown on and punish students involved in the 1989 student movement was posted. A letter written by two Chinese dissidents and sent to the CCP as well as the Taiwan National Party was banned in mainland China but was also posted here. Some overseas dissidents disseminated their anti-CCP views via this forum as well. Other sensitive topics have included the rights and wrongs of Tibetan independence movement, patriotism vs. nationalism, the rethinking of the 1989 student movement, and technical hints for breaking the CCP's censorship on the Internet.

The two most often discussed topics on Discussion Forum were democracy construction in China, and BBS discussion rules.

Discussions about democracy in China on Walton

Most of the discussions about democracy were mildly serious, half joking or totally ridiculous, as the following dialogue, observed in the English Discussion Forum demonstrates:

> *Posted by Kuo Ming (2016) on 11/05/96:*
> Wang Dang (sic) must die ! China doesn't need democrazy (sic), neither does Hong Kong![1]
> Democrazy is bullshit ! Chinese do not need democrazy. We Chinese need 'the socialism with Chinese characteristics.' HKnese will also enjoy the socialism with Chinese characteristics after year 1997. Who the hell wants the democrazy ? .....
>
> *Posted by mpan (2526), 11/09/96:*
> *In Reply to: Wang Dang must die! China doesn't need democrazy, neither does Hong Kong! posted by Kuo Ming (2016) on 11/05/96:*
> Hi. You must be from Mainland China. Me too. I am Fujian. You said China doesn't need democrazy. I disagree with you. Every country needs democrazy. The only difference is our China needs a democrazy with Chinese characteristics which is (sic) different from capitalism.
>
> *Posted by Kuo Ming (2016), 11/09/96:*
> *In Reply to: Every country needs democrazy-----Min Pan posted by mpan (2526) on 11/09/96:*
> I am from HK. I advocate the promising National Social Reform Party which will, if in power, force every Chinese to follow GVT's way. Every walk of living should be dressing uniforms to make sure the national integrity be not violated. Legally death sentence will be the only way to eliminate traitors like Wang Dan and the people who refuse to follow the political moves leading china to be great.
> Chinese characteristics, basically are anti-democracy and not able to match with the democratic environment. CCP is now walking to the right direction. But she made a mistake by letting Wang Dan alive. If Wang Dan is executed, the west will shut their mouths all together. ..... Friend, believe me. Chinese including singaporean, HKers or Taiwanese, are the last people that will take democracy. Autocracy is the Chinese characteristics mentioned.

Many similar debates were too long to reproduce here but the following clip of a group of message titles in the form of hypertext, which often was all that a participant wanted to say, shows us an example of

[1] Wang Dan was the vice commander of the Tiananmen Student Movement Headquarters in 1989. He was jailed after the crackdown of the movement until 1994, when he was released and immediately detained for 16 months. He was sentenced to

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how wild such discussions could become. In a posting titled 'The Resolution of the Plenary Meeting: A mobilization order for taking the road back,' the participant did a rational and logical analysis of the resolution of the CCP's recent Plenary Meeting and expressed his (?) serious doubt regarding any positive role this meeting could have played in promoting democratic development in China. Five messages with only titles and no content in content pages, then, followed:

- The Resolution of the Plenary Meeting: A mobilization order for taking the road back. Jingcao 01:35:33 11/14/96

Re: If you want to propagate something, don't talk nonsense Truth 03:26:11 11/14/96

If you cannot fathom what is happening in Beijing, it's because you have a stupid brain! ROGER 00:54:11 11/14/96

Of course, most of us people are good people, but that is not the case in foreigners, most of them are bad people! Scorn! 15:29:06 11/14/96

Are you intelligently handicapped, (sic) if your head is filled with glue, why are you speaking like a lunatic? }} 19:37:29 11/14/96

If I had not been nuts when I were together with a person like you, wouldn't I have given you enough face (showing due respect for your feelings--author)?

- 22:34:45 11/14/96 (from Chinese Discussion Forum)

However, not all discussions about democracy were that irrational, as someone proposed. Within half a month from October 28-November 12 of 1996, twelve messages were posted in Chinese Discussion Forum that discussed what democracy is, whether China has democracy now or not, whether China is moving toward democracy and whether setting up a mayor's hotline and mayor's mailbox is itself democracy. All these discussions addressed the issues in mainland China. Three participants (one of them labeled self as an ex-democracy-movement-participant) agreed that developing the economy should be the government's first priority and that democratic development is best considered only after basic education is first developed. The ex-democracy-movement-participant singled India out as an example to make the point that democratic development does not necessarily get people out of the mud of poverty. Therefore, he championed the government's current policy of prioritizing economic development while maintaining control, and thus stability, over everything else (11/08/1996 at 06:38:09). Another participant named "trakemi" said that "China has maintained a high developing speed for 16 years and the prospects are very good, we should not make any social experiments because of some idealism, instead, we should maintain the current developing momentum, stabilize the society and do a better job in economy (11/07/1996 at 11:38:44)." In response to such opinions, a participant named Liu Jianjun, who might be the only person in this discussion group who used his real name, wrote that democracy is not geographically distinctive, "there are no American style democracy, British style democracy, or Japanese style democracy. ..... As a

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another 16 years of imprisonment in early November of 1996 mainly for his radical articles published abroad and his speeches

matter of fact, both economy and democracy are needed in the process of human development, both humankind's landing on the moon and acquiring right to vote are a progress toward the world of freedom. The existence and development of human being--the life with thoughts--need both food and clothing *and* dignity as well (11/12/1996 at 11:01:36).

Discussions about BBS discussion rules on Walton

Walton Discussion Forum was commingled with rational and irrational, serious and non-serious discussions. On most occasions, a rational and serious posting would be followed by irrational and/or non-serious attacks, as I pointed out in the section of "The attitudes and approaches of discussions." One participant questioned why all the posted messages that dealt with facts had been cursed (Reply, 11/09/1996 at 13:54:51). A frequent participant named "little grass" found that the forum was so filled with invectives that Walton was more like a free market rather than a place for serious exploration, and that someone even used his alias to defame him, therefore he decided to leave this forum for a "fresher place (10/20/1996 at 03:19:47)." Another participant expressed dissatisfaction with this forum in his (?) message 'Shut up your dirty mouth': "It is no longer easy to see excellent articles and sentences on Walton. It is full of foul language and dirty words. Is this what the inner world of us Chinese like? Please cherish this forum. It is hard to come by for us to meet here (jiach, 11/16/96)." A participant named "Explorer" suggested to the webmaster: "The net is like a society. It should have its law. Those people who only swear, but neither know how to do theoretical analysis, nor respect fact and other participants should be punished. ..... (11/09/1996 at 09:52:06)." Some participants even doubted if more freedom is a good thing for Chinese people. One of them wrote: "More freedom is not necessarily a good thing. Walton is no more than four months old. The result of freedom is that the webmaster has to delete dirty words online every day (Weird, 11/08/1996 at 09:56:04)."

In the face of such chaos, the webmaster ABC asked participants for discussions of self-discipline principles. He held that "we need to maintain the freedom of speech, but should get rid of senseless invectives," and proposed that "any messages carried with words of sexual organs, the f— words and other adult literature will be censored (11/15/1996 at 15:43 02)." This suggestion got two positive responses.

In the English Discussion Forum, someone called Fall also called upon disallowing anyone to fake another's name, and gave some detailed technical suggestions (10/14/1996). A participant called Ultra

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published in news reports written by foreign correspondents.

Man argued for rational political discussions in this forum: "Let us have another crack at it. Not so long ago, we saw a group of TI'ers from China Chat trash this forum; they conducted verbal assaults, used foul language pervasively, and faked the identities of other chatters. All the while these guys helped to defend each other. Let us not see this happen again. ..... (11/24/1996)." In reply to this message, a participant named Cathay wrote that "Some amount of debate or dispute is indispensable to make the forum lively and interesting. However there is a limit beyond which the forum and people on it will be degraded. ..... It is a good idea to engage in gentleman-like debate for the benefit of better communication (11/25/96)."

Compared to the Chinese Discussion Forum, the webmasters (who went under two names shenjee and barbara) of the English Discussion forum were much more heavy-handed. In reply to a message asking why all the old postings were all gone, they wrote:

> Nothing happened. I just cleaned up all the old junk messages. No one was driven away. It's just that the house rules of no foul languages and no personal attacks will be reinforced here from now on. Rest in peace, and speak when you have something meaningful to say (shenjee, 11/23/1996).

> I will be watching this forum from now on. This forum has been a disgrace. I hope from now on people will start to respect each other, and most of all, respect themselves. All discussions with a view will be welcomed. Personal attacks will be removed. This is our place (barbara, 11/22/96).

It was interesting to note that on this America-based BBS, almost every message criticizing the CCP or analyzing current affairs with a liberal tone would be accompanied by replies in favor of CCP, like 'The most reactionary... Revolutionary 17:10:26 11/26/96,' 'His parents and your parents are all counter-revolutionists. Down-with-opportunists 17:16:47 11/26/96,' 'Extremely reactionary! Extremely crazy! Kill! Kill!! Kill!!! Firmly-crash-the-counter-revolutionary-group 18:19:06 11/26/96.' Critical postings would usually encounter harsh criticism by style articles. As a matter of fact, articles and news reports from Xinhua News Agency and other mainland Chinese mass media were often pasted to the Forum. No wonder someone exclaimed that the forum had been controlled by the CCP (Ma 11/06/1996 at 23:34:12).

Hard topic discussions on Richtalk Forum and Free Market

A huge gap was observed between America-based Walton Club groups and the China-based Richtalk Forum and Free Market groups with respect to the number of messages containing hard topic discussions. During the period of observation, a group of derogatory remarks were posted in one message sent to Richtalk Forum's Free Talk group in the form of doggerel. The remarks criticized bureaucratic phenomena and unjust social distribution of income, and described teachers' low standard of living and

countryside cadres' economic exploitation on farmers (Eastern Bird, 11/03/1996 at 22:31:56). Someone, then, replied to this message by adding one more derogatory remark that mocked the CCP's Four Basic Principles[2] in order to criticize the communist grass-roots cadres: "Cigarette is basically given free by others. Alcohol is basically paid as tribute by others. Salary is basically not raised. Wife is basically not used (ssaamm, 11/05/1996 at 16:14:27)."

One participant named Mars Man, who was apparently not satisfied with the abusive use of the Internet as reflected in such BBS discussions, wrote: "Earth men, especially you people in backward China, should treasure this advanced technology (11/13/1996 at 03:37:34)." The message incurred 3 hostile replies:

> Get out and go back to Mars!!! knight 11/13/1996 at 05:23:12
> Don't talk nonsense here if you feel bored. Bored 11/16/1996 at 02:23:23
> What I am most tired of is the f---ed egg of "justice" like you. Bored 11/19/1996 at 04:29:08

In addition to hard topic discussions found on Richtalk Forum, the Free Market group on Bamin Netcity was also analyzed. About the time Free Market began, a pro-government book entitled *China Can Say No* got popular in China. This book discussed the role China can play in the world, Sino-American relationship and the CCP's rule. Readers were obviously eager to present their opinions of this pro-government as fifteen messages, some praising, some criticizing the book, were observed on Free Market.

The webmasters' censorship of discussions

Censorship of message content was observed on all the BBSs except BOL Teahouse. The censorship on Walton was done according the two rules proposed by the webmaster in the Chinese Discussion Forum: 1. Any messages containing the words of sexual organs, the "F" word and other "adult" literature will be censored; 2. Any messages that contain content in the "title" and "name" columns but have no content in "content" column will be deleted (11/15/1996 at 15:43:02). The first type censorship took place on a daily basis while the messages that met the second censorship criterion were left in the Forum for anywhere from two weeks to more than a month. Perhaps this was because the webmaster wanted to retain the natural and logical flow of original postings. No salient censorship of radical political advocacy, criticism, or opinions was observed on Walton Discussion Forum.

[2] The CCP's Four Basic Principles are: stick to the leadership of the CCP, stick to Marxism, Leninism and Maoism, stick to the socialist road, and stick to the proletarian dictatorship.

Censorship on the China-based BBSs was more politically oriented. Even simple criticisms of some government agencies were sometimes not tolerated. In Richtalk Forum, the message mentioned above titled 'Excuse me, how many more years can the CCP be in power?' was censored the next day after it was posted. Such discussions were absolutely forbidden on Richtalk Forum even though such censorship rules were never stated. A couple of protest messages were found in the Test Area discussion group on Deep Feeling on the Net. One of them wrote: "My article about the difficulty of dialing into 96300 modem pool run by the Post and Telecommunication Bureau was deleted overnight. 96300 does not think of improving its terrible services, on the contrary, it does not allow any criticism. This is the typical bureaucratic style. ... (rt, 11/23/1996 at 07/55/57)"

The most dramatic censorship was observed in the newly established Free Market on Bamin Netcity. The webmaster seemed determined to keep his (?) words stated in the discussion rules "Please do not touch politically sensitive topics!" On the evening of November 4 (China time), the first article about the popular book *China Can Say No* was posted (20:04:13). On November 4th (the US time), when I observed this forum, I found the content of this article, which I had not a chance to read, was replaced by the following message: "The webmaster said: 'Please do not touch politically sensitive topics!!! This article has been deleted!!!" What was interesting was that another article posted on the morning of November 5th (China time) which discussed this book in a positive tone survived. In fact, it remained in the forum until the web pages were redesigned at the end of that month. As a result of this observation, it is assumed that the first article must have criticized the book and was therefore, not to the liking of the webmaster. This presumption was confirmed by another message censored at the noon of November 5th, which, in turn, criticized the second article, which was retained. Webmaster's swift censorship of the initial message obviously caused great discontent from participants. Two of them wrote sarcastically:

> The webmaster's response was really fast. If he did not censor those articles, I am afraid in a week Bamin itself will be "censored" by the government. Can any netizens provide me (the names of) some overseas BBS stations? Preferably in GB mode (11/05/1996 at 16:28:52)?[1]
>
> It is the webmaster who can really say NO! (11/10/1996 at 01:17:26)

Another participant wrote:

> So far there are already 7 to 8 pieces of articles discussing *China Can Say No*, two of which are positive about the book, and all the other have vehemently criticized it. The two articles censored by the

[1] GB stands for Guo Biao (national standard), the Chinese simplified character system used in mainland China.

webmaster both criticized the book as far as I know. Isn't it very clear which needs courage, writing *China Can Say No*, or criticizing this book (11/10/1996 at 22:28:46)?

Following these criticisms of the webmaster's censorship, all subsequent messages, either praising or criticizing the book, were retained. However, it would be wrong to assume that this episode brought an end to censorship on the "web." It is more likely that, since this particular BBS has just opened, the webmaster was either afraid that overt censorship would scare away participants, or he was simply not quite sure if what he (?) had done was right. After another two weeks had passed and the Free Market's web pages were redesigned, all the postings about the book, whether pro and con, were deleted. A new "welcome title" was seen which read "BBS--Free Market welcomes everyone to come here and have casual chats (emphasized by the author)." An eye-catching line in bold, red words immediately followed the title: "**Warning: publishing any speeches against the Constitution is strictly forbidden!**"

Censorship was not observed on the BOL Forum which has also been recently established. As an example, two messages that vehemently criticized ChinaNET, the sponsor of the BOL Forum, for high charges and slow data transmissions were never censored.

Discussion

Following is a summation of my findings.

1. Neither hard topic discussion groups nor hard topic discussions were easily found on the domestically based Chinese BBSs. This was not surprising in light of the fact that these are either directly or indirectly influenced by the government's network policies. The majority of hard topic discussion groups and discussions were found in Walton Club, an overseas BBS which was neither administratively nor legally tied to the Chinese government. It is apparent that BBSs in China have been set up mainly for the purposes of casual chats, and not for political and democratic involvement.

2. From state owned BBSs, through the privately owned BBS, to the overseas BBS, discussion rules were more and more favorable for open and un-restricted hard topic discussions. The statistics of per day average number of posted messages on different BBSs tell us that those BBSs with less draconian discussion rules and/or no political censorship and those discussion groups offering unrestricted hard topic discussions have attracted the most netizens. Currently, overall participation in any BBS discussions in China is still very low compared to that in the West.

3. Discussions tended to be belligerent, offensive, and confrontational, especially on non-government-affiliated BBSs like Richtalk Forum and Walton Club.

4. Many mainland netizens have tried to engage in meaningful discussions on the Walton Club regarding democratic development in China, and about how they can and should use this new technology to pursue rational, fair, tolerant and reciprocal online discussions.

To understand these phenomena, I believe a holistic examination of the diffusion of the Internet technology in China and the current social environment is necessary. The Internet infrastructure is developing quickly in China. During the first half of 1996, the total number of installed phones in China reached 61.55 million with 5.47 phones for every 100 people. The computer networks in China have covered more than 2,000 cities (Gonza, 1996). China's total sales of computer products hit 7 billion US dollars in 1995--an increase of 51% over the previous year (Xinhua, July 1996). Of the nearly one million computers sold in 1995, 20% were bought by families. There are now three to four computers for every 100 urban households (Mahende, 1996). About 4.5 million personal computers are in use in China. More and more people are getting access to the Internet.

Nevertheless, when we flip the coin, we see another picture of the development of the Internet in China. Less than 20% of urban families in China have phones which means that most of the people who access the Internet do so at work where they are controlled by party cells. Network development is also lagging in many geographic areas of China. According to the information provided by CSTNet, 12 coastal cities had 77 hosts while 14 inland cities had 30 hosts by the end of 1996.[4] In addition, compared to the United States and Europe's computer-rich environment, China is still computer-poor. In order to become a netizen, the average cost of a computer, a modem, related software and registration fees is 15,000 yuan (about $1,724) (phone service establishing fee not included) (Xiao, 1996). This is a huge burden for most urban dwellers who make an average of $425 a year (Johnson, 1996). This luxury would cost average Chinese farmer, who earned an average of $190 per person in 1995, around 9 years' wages (Parker, 1996). Given the additional factor of pervasive illiteracy in both language (Chinese and English) and computer knowledge, it seems that access to the Internet technology by rural residents is a long way off. Whether urban and rural dwellers, "most people in China don't know what an on-line service is, or what it has to do with them," said a head of an Internet service company (Schoof, 1996). By the end of 1996, 120,000 of

[4] URL: http://www.cnc.ac.cn/chinawebsite1.html

China's 1.2 billion residents were using the Internet (Gonza, 1996). In other words, only about one in 10,000 Chinese citizens leaped over the great wall onto the information superhighway.

The point is that those who could potentially gain access are few because of lack of infrastructure, high fees, literacy, etc.. Naturally, even fewer netizens could be expected to participate in BBS discussions either because they are simply not interested in such discussions, are afraid of expressing themselves on such monitored public space, or because they are not aware at all of the existence of such public forums. By comparing the per day average number of messages posted with the total number of netizens in China, the BBS discussion participation was extremely low.

What may be most intimidating to Chinese netizens wishing to engage in such discussions is the legal pressure from the government. As part of the restrictive Internet regulation implemented by the Chinese government, users were ordered to register with the police and sign a statement promising not to harm the state or commit a crime (Xinhua, February 1996). Beijing has commonly used state security law to punish anyone who it feels threatens the rule of the CCP. These laws generally allows for long prison terms for offenders and so tend to have a chilling effect on netizens, thus, bringing about an almost complete "self-censorship." Fear of these regulations is obvious as almost everyone using these BBSs employs an alias thus making it easy to hurl invectives or engage in personal attacks without being identified. Nevertheless, a proficient webmaster can easily trace down any address because all participants of BBS discussions must register with the BBS before they can send a message. That is possibly one of the main reasons why so few netizens participated in any hard topic discussions on those BBSs owned and operated by the state government.

In recent years, China has been methodically putting in place a series of filters and "fire walls" that are effectively limiting the Internet's potential threat to Beijing's information monopoly. In September of 1996, the government announced that it had successfully blocked some 100 sites from abroad, including those of major Western newspapers, human-rights organizations, Chinese and Tibetan activists (Clough, 1996). In light of this kind of political environment, it is not difficult to understand why the discussion rules of state owned BBSs are so politically restrictive. The webmasters' ever ready and swift censorship of "troublesome" political messages on these BBSs is simply the logical extension of the government's censorship of sensitive web sites. Such censorship could bring further harm to netizen's interest and courage for involving in hard topic discussions.

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Nevertheless, even with restrictive net regulations and unfavorable BBS rules limiting discussions, many netizens still show great interest in hard topic discussions whenever possible. That is why the foreign based Discussion Forum (from which the government cannot trace down people's identity) has attracted many more participants than all the discussion groups on those domestically based BBSs. To some extent, the high participation on Walton reflects, in one sense, that Chinese netizens ARE interested in hard topic discussions, but such discussions on domestically based BBSs have been suppressed and self-censored.

Providing economic information services for business and industry has certainly been emphasized by China's network developers while scholarly communication on the Internet is mainly limited to technical schools for purposes of scientific research. Setting up BBSs is just a by-product of the major effort to utilizing this new technology in order to advance China's economy. BBSs were never meant to be taken seriously by the general public, and certainly never meant to be used as tool in criticizing the CCP, whose image is likened by the CCP to people's savior.

At any rate, BBSs have opened up a new channel for Chinese people to express themselves. This is a channel both similar to and different from "wall paper"--a traditional "mass" medium. Wall paper has been used from the 1950s until today even though it has been outlawed. One of the major characteristics of this medium during and before the Cultural Revolution (1966-1976) was that ordinary citizens used it to engage in "class struggles." To be more specific, it was used to expose other people's privacy, trump up charges, defame character and hurl insults and threats at those whom the poster does not like. Posters would almost always use a name something like "A Red Guard," "A group of revolutionary soldiers," or no name at all. After wall papers were outlawed at the beginning of the 1980s, they have been occasionally used but much less frequently. During the 1989 student movement, wall paper was, again, extensively used by students and ordinary citizens but to expose the social injustice and the ugliness of official profiting, to exchange political ideas, and to promote political reform and democratic development. Again, postings were almost always anonymous.

Wall paper, for whatever reason, has been used primarily as a fighting machine. The same discourse and discussion approaches you saw in wall papers years ago, you see today on BBSs. Wall paper and BBSs are similar in the sense that both allow publishers to post their messages anonymously and both are used as a fighting machines. To appropriate a comment made in an article in China's *Liberation Army*

Daily, the Internet "is enabling many people to take part in fighting without even having to step out of the door (1996)." What is different is that, today, BBS extends wall paper's function of political arena to make itself a supermarket of diversified ideas and interests. As a result of the Internet, people have the capability of engaging in political discussions though such discussions are discouraged and relatively few people are actually engaging in them. Even so, Chinese can still participate in other discussions they are interested in such as looking for a boyfriend or girlfriend, finding information of how to buy a computer, or discussing the issue of whether or not Madonna is a bitch.

Since 1989, the CCP's political suppression has tightened. As a result, people who used to seek democracy are now seeking financial prosperity. From enterprises to individuals, long-term planning is replaced by short-term profit-making. Even government's investment on the Internet remains limited to domains such as commerce and marketing in an attempt to yield near-term returns. A strong atmosphere of nihilism pervades the whole Chinese society. Popular writer Wang Suo's many soaps like *Stories in An Editorial Room*, and *Die Right After I Enjoy Myself To The Full*, that have been widely welcomed by the general public, negate all traditional values such as democracy, social justice, righteousness and integrity. Such social environment in this particular historical period may partially explain why netizens are more cynical, and less serious and sincere in their BBS discussions, especially in the very few hard topic discussions than they were in previous wall paper discussions. They tend to trample traditional values and show little respect to those who promote them in online discussions. Unlike wall paper, BBSs can disseminate viciousness much more easily, more broadly and more quickly than wall paper ever could. As a result, more people are hurt more easily and eventually. These abuses are causing some netizens to think twice about whether or not the unlimited and unrestricted freedom of current Internet technology is actually a virtue.

Conclusion

The findings of this study provides further evidence in support of Ammu Joseph's conclusion in his Indian new media study: "[T]echnology per se appears to be a not very important factor, and far from being a determinant, compared with political will and social purpose" in democratic development. Economic development and democracy may not be incompatible, as is the case in Western developed

countries, but the fact is that they *are* in China, as they are in many other Third World countries. For a Third World country like China, which places the increase of the GNP and per capita income as their exclusive goals of development, and which attempts to impede the "invasion" of Western democratic ideas by monitoring every public utterance in cyberspace, the role the Internet as a tool in developing democracy is limited.

Even if a democratizing tendency does emerge on the Internet -- as there are tentative signs of – there are problems with the majority of citizens getting access to the technology. Unlike Western countries, China has a huge rural population, 80% of which are farmers. Most, if not all farmers tend to be under-privileged with respect to economic status, education, and access to advanced technologies. In the case of India, the proliferation of the Internet technology has, in no way, altered the existing pattern of access to the media and/or information in favor of the majority of the population. The Internet is still accessible only to the already privileged classes and caters almost exclusively to *their* information and entertainment needs and desires. The information gap between the haves and the have-nots is unlikely to narrow, and may even widen, in the near future (Joseph, 1996: 67). With a major portion of the population left out of this new technology, using the Internet to develop democracy in China is unrealistic. Democracy involves participation, and participation, in turn, cries for information. For participation to be an effective force in the public arena, participants must not only have the necessary information but must also be able to express their points of view freely through communications systems.

This paper concludes then, that the Internet does not carry an inherently democratizing force that is irresistible, and is, therefore, not necessarily an agent of democracy. "Mass media can serve democracy only when those who manage them feel a passionate responsibility to create it and maintain it (Bogart, 1996)." Although I believe that recent trends in the politics, society and media in China do not bode well for the promotion of real and meaningful democracy through new Internet technology in the near future, I do not negate the empowerment potential of the Internet. The Internet has created a virtual classroom that is otherwise unavailable for Chinese people whereby they can begin to learn what democracy means to them through their daily exchanges of ideas and information. As more and more Chinese people join the Internet cyber-family, as necessary political, economic, social and cultural climate is slowly but consistently cultivated through the virtual classroom, and as the post-Deng era continues, I believe that the Internet can

be expected to play a more important role in paving the way for China to become a real modernized country with both abundant materials and enjoyable democracy.

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- Deep Feeling on the Net from ShenzhenNet--http://bbs.szptt.net.cn./
- Free Market from Bamin Netcity--http://netcity.fz.fj.cn/chat/bamifrm.htm
- Richtalk Forum from Stone Richsight--http://www.srsnet.com/richtalk
- Walton Club from Walton InfoNET--http://www.waltontech.com/cgi-bin/waltontech/Club/club.cgi

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Bystanders at the Revolution: A Profile of Non-Users of Computer-Mediated Communication in Hong Kong Universities

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Bystanders at the Revolution: A Profile of Non-Users of Computer-Mediated Communication in Hong Kong Universities

Abstract

This research attempts to understand non-use of computer-mediated communication among faculty members in Hong Kong universities. Survey research was used to profile characteristics of 134 faculty members from three universities. A comparison of user and non-user characteristics indicated no significant differences on the basis of gender or user's first language but age and faculty were important in distinguishing non-users. In explaining reasons for non-use, respondents noted they lacked equipment, know-how, or motivation to use CMC.

Introduction

The computer, as a rapidly developing form of technology, is adding a variety of options to the transmission of human communication. Computer-mediated communication has been defined as "information exchange that takes place on the global, co-operative collection of networks using TCP/IP protocol suite and the client-server model for data communication" (December, 1996, p. 24). Communication via a computer can take a variety of forms: from person to person (e-mail) from person to group (Usenet) or from person to mass (a homepage on the WWW, e.g.) to name a few (December, 1996, p. 21-22). Not long ago, the definition of computer-mediated communication simply included computer conferencing (of which computer bulletin boards were considered a part) and e-mail (Williams, Rice & Rogers, 1988, p. 9). But now technological advances have broadened the scope of what is defined as CMC to included mailing lists, IRC, MUDs, and web sites among other things. The information that is passing through these different channels may be scholarly, recreational, business, personal, interpersonal, group, organizational and mass (December, 1996, p. 24; Morris, M. & Ogan, C., 1996). Despite features that are familiar from broadcasting and publishing, this is a new way to communicate, mostly because of the dimension of interactivity it brings. (Anderson, 1995, p. 3).

The Internet is here to stay because it allows "people to exercise one of their most basic desires: to communicate" (Anderson, 1995, p. 6). Communication scholars increasingly are attempting to understand how this unique form of message transmission is operating; how this form of technology is having an impact on the process of communication. (Newhagen & Rafaeli, 1996, p. 4). Yet one problem with research on the Internet-based computer-mediated communication is the lack of specific information concerning its users. Much of the research indicates, for example, the numbers of people who can access the Internet, but does not "differentiate between people with access to these features and those who actually use them." (Brightman, 1995, p. 15) Among the research that does attempt to differentiate among users, attention to user characteristics generally receives quite a bit of attention, due, no doubt, to the practical benefits this brings to those who would seek to know the users of the Internet for marketing purposes. (See Magelonsky, 1996, p. 8, for an example of the demographic information collected on the buying habits of both users and nonusers of the Net.)

User characteristics have an important role from a theoretical standpoint as well, being at the heart of audience composition theories (DeFleur & Dennis, 1994, p. 264; McQuail, 1987, p. 237-238) and the stakeholder dimension of computer-mediated communication research (Rice, 1989, pp. 440-447). It is also especially important in uses and gratifications theory (Newhagen and Rafaeli, 1996, p. 10; Morris and Ogan,

1996, p. 47). As Katz (1959) pointed out in his initial description of this approach, it is important to identify the audience and understand what it is doing with communication. From a uses and gratifications approach, the audience is generally active and is making choices on their uses of mediated communication based on a variety of factors. (Severin & Tankard, Jr., 1988, pp. 269-276), and this is appropriate to apply to computer-mediated communication.

In attempting to understand some of these factors in the use of computer-mediated communication, researchers have considered a wide range of concepts. They include age, gender, income, education, social status, length of employment, personality traits, job tasks, job positions and media styles (Rice and Case, 1983, p. 151; Komsky, 1991, p. 316; Magelonsky, 1996, p. 8; Brightman, 1995, p. 15; Badagliacco, 1990; Kohl & Harmon, 1987, Linn, 1985; Reisman, 1990; Kantrowitz, 1996; Tannen, 1996; Garson, 1995; Ogozalek, 1991; LaRose and Mattler, 1989). As a result of this research a profile of CMC users is developing.

However, while an increasing amount of information is known as a result of this research on users of CMC, very little is known about those not using this new means of communication and the reasons for their choice not to do so. Indeed, what does seem to be known in many cases is assumed from taking the profile of the typical user and considering the contrary. Yet if we know that CMC users are typically young, better-educated and have higher incomes (Magelonsky, p. 8) does it naturally follow that non-users are older, less educated and have low incomes? Specific information is needed to determine whether this is a valid assumption.

Generally, a theoretical underpinning to explain this is lacking. The literature from diffusion of innovations research, for example, while considering this to some extent, is not particularly revealing. Similarly, it focuses primarily on the characteristics of those who do attend to new developments rather than those who do not. Indeed, Rogers considers non-users only in passing when he examines those people who resist adoption of innovations, a group he calls "laggards" (Rogers, 1983, p. 250). What is known about those who resist innovations is that they are fixed on the past as their reference point and interact with others who are like-minded. They tend to have a more precarious economic situation than others, exert little influence and are generally socially isolated (Rogers, 1983, p. 250-1).

Very little information exists specifically about the non-users of CMC. Generally, men are found to dominate computer communication networks (Herring, 1996, p. 145, 151-152) and statistics consistently show more male than female users of the Internet. (For example, Newsweek [Who's on the web, 1995, p. 4] reported females represent 35% of all WWW users). And while in the general population users of CMC tend to be younger in age, this is not always the case (Garson, 1995; and

Ogozalek, 1991). In the case of higher education in particular, Foa notes that age is a factor in acceptance and use of computer-mediated communication. He writes, "ironically, it appears the full professor and those at executive levels are the hardest to convince to take the lead in using technology perhaps because many belong to the precomputer generation." (Foa, 1993, p. 27). So, generally, the focus is on those using CMC and while infrequent users may be considered as part of this analysis, non-users are typically ignored.

Another limitation in considerations of CMC in the literature is that the overwhelming amount of research conducted on this form of communication comes from a Western context. For the most part, that means research from an American experience. While exceptions to the rule exist (Grupta, 1990; Domozetov, 1989; Straub, 1994; "The Internet and Asian Studies", 1996), the bulk of the information about Internet users fails to consider the implications of computer-mediated communication on people in other parts of the world. More research is needed to consider what characteristics define users and non-users of CMC in unique international contexts.

Method

This research seeks to address these needs by attempting to understand those who are not involved in the use of computer-mediated communication. Given the dearth of information from non-western contexts on the use of computer-mediated communication, this study attempted to profile non-users of internet-based computer-mediated communication in Hong Kong. Hong Kong, is a place where the influences of Eastern and Western civilizations mix, and as such offers a unique context in which to understand the use (or lack thereof) of this form of communication. As well, the high level of technology available to individuals in this society makes it an appropriate place in which to study the way people use computer-mediated communication.

This research focused on a particular segment of the population: the teaching staff of universities. The university was deemed an appropriate context in which to profile the use of computer-mediated communication for several reasons. The impact of CMC in organizations in general and universities in particular has been an important part of the literature on this topic as noted previously. As well, conditions for use are potentially limitless and cost-free to all university staff because computing facilities are on hand in universities to provide it. (Komsky, 1991, p. 310). Therefore, there are few limitations in the university to prevent those who desire to use it from doing so. Universities are important places to study computer-mediated communication because by their very nature of they are "premier information-processing organizations" (Rice and Case, 1983, p. 132). As well, within universities, movements of all kinds of

information are essential to research and career activities of members of staff. Therefore, if anyone would be motivated to exploit computer-mediated communication and have the means to access this means of communication, it would be university staff.

In recent years, researchers have attempted to understand the role computer-mediated communication plays in an educational context. Historically, the Internet has been linked closely with academe, so much so that "in large measures, the Net can be considered an academic accomplishment." (Newhagen & Rafaeli, 1996, p. 11). Despite the close linkage to an educational context, there still has been resistance to its implementation by educators of all kinds. (Foa, 1993; Cuban, 1986; Honey & McMillan, 1994). Understanding the nature of this resistance is not only important in the context of this particular organization, but also can reveal indications that might inform on a broader basis as the Internet becomes a way of life in the general population. Information on the way new communication technology is used is needed in specific contexts and the university provides one such context in which the variable of education can be held constant for a more realistic understanding of how other variables might be operating. Finally, it is important to understand how teachers at the tertiary level are operating since they have a great potential to influence students by their own practices of CMC use (defined broadly in this study to include e-mail, usenet, WWW, gopher, IRC, listserv and game applications).

Survey research was used to question the practices and perceptions of Internet use among university teachers in Hong Kong. The universe of individuals considered in this research was all full-time teaching academics in Hong Kong universities. Cluster sampling was used to randomly select three of the seven government supported tertiary institutions in Hong Kong. The University of Hong Kong, the Chinese University of Hong Kong, and the Hong Kong Baptist University were the universities randomly selected for study. Current university bulletins for each of these three institutions were obtained and from them a sampling frame of teaching staff was developed. The total number of active tertiary educators from these three universities was 2124 teachers. A simple random sample of 1/3 of all teaching staff was chosen from the sampling frame. The sample contained 708 individuals.

The background literature was used to develop a questionnaire for this research. In addition, a number of the questions used in this research replicated an earlier study conducted in a university setting by Komsky (1991). The questionnaire was submitted to a panel of experts as well as pretested on similar subjects. Modifications were made from suggestions obtained from the panel and the pretesting results. A copy of the questionnaire was translated into Chinese so that subjects could receive the questions in the appropriate language. Only Chinese and English versions of the questionnaire were

prepared since these two languages are the designated languages of instruction at universities in Hong Kong.

Interviewers were trained to use the survey instrument and, after practice sessions, conducted face-to-face interviews with the subjects. Interviews were conducted from December 1-15, 1995. Interviewers arranged appointments to talk to subjects in their offices. Each interview lasted approximately 15 minutes. A total of 491 interviews were completed successfully for a response rate of 69.4%. The questionnaires were coded, input into the computer and processed using SPSS.

Subjects were asked if they were connected to the Internet and if so, if they used that connection. As seen in Table 1, the results of this general survey indicated that while 388 subjects said they were connected to the Internet, 36 said they did not use this connection. For the purposes of this research, non-users were considered to be individuals that did not use computers in any way for communication purposes.

Table 1 Respondents: Users and Non-users

	n	%
Connected	352	71.7
Not Connected	103	21.0
Connected, Don't Use	36	7.3
Total	491	100.0

Dividing the subjects into users and nonusers it can be seen that almost 72% used their Internet connection while 28% were nonusers. Those responding that they did not have a connection or that they did not use the connection they had were the focus of this study. (The findings profiling the users of e-mail and internet-based CMC are reported in Elliott, 1996 and Elliott, 1997, respectively). From the total of 139 questionnaires from designated non-users, five were unusable. The total number of non-users considered in this research was 134 individuals. This research will examine this subset of non-users, comparing it with users of CMC in order to understand differences.

Given this focus for investigation, the following research questions were posed for this study:

What are the characteristics of non-users of CMC among academics in Hong Kong?,

What are subjects' reason for non-use? and,

Are there any significant differences among non-users on the basis of these characteristics?

Findings

In order to consider the characteristics of non-users in a meaningful way, a comparison of the non-users was made with users of CMC. In this regard, a comparison was made on the basis of gender, age, title, number of years teaching experience, faculty and first language. Next, the reasons non-users noted for not using CMC were considered. Finally, an analysis was conducted of differences between non-users defined by the characteristics noted above on the basis for their non-use.

A Profile of Non-Users

What then is the description that is revealed about non-users of CMC from this research? First of all it is important to see that slightly more than a quarter of all subjects were without e-mail or internet access. That is, non-users of this form of communication represented 28% of all respondents. This is quite a large percentage given what the literature indicates is an important resource for academics to exploit. As well, there is no cost and theoretically unlimited access privileges through the university computer system. That such a large part of the university teaching staff is not using this is important to see.

Table 2 displays a breakdown of usage of computer-mediated communication by gender. Of the 134 subjects who were non-users of CMC, 29 were female and 105 were male. For both males and females, 72% were users of CMC while 28% were non-users. So, while numerically there were three times as many males as females as non-users, proportionately these numbers are almost equal. Chi square analysis revealed no significant differences at the .05 level of probability between males and females on the variable of use/non-use of CMC

Gender, therefore, is not a revealing characteristic to distinguish non-use of computer-mediated communication. This is striking in comparison with the general literature which indicates females are vastly outnumbered by males in the use of CMC applications. Perhaps the context explains this in part. Education could be a levelling factor here, at the least creating a homogeneous population that in many regards would lessen the differences in their use of this means of communication. Both males and females would have the same access to computers and computer applications and have, as well, many of the same motivations to use them. More specific research is needed to determine actual patterns of use but these findings do indicate that in this particular context females are on an equal footing with males in the use of CMC.

Table 2 Gender by Users/Non-Users of CMC

	Users n	Non-Users n	Row Total
Male	277	105	382 78.9%
Female	73	29	102 21.1%
Column Total	350 72.0%	134 28.0%	484 100.0%

When it comes to age and CMC use, the literature indicates the users tend to be younger rather than older individuals. This research sought to examine if this was the case in the university context. The findings in this regard confirm that this is indeed true. A significant difference between age groups was found to exist on the use/non-use of computer-mediated communication (x^2=70.5, p<.001). Table 3 shows this difference is one in which a small percentage of non-users is found in the youngest category (10.5% of all subjects) while about two-thirds of all subject 51 years of age or older were non-users. One-third of all those in the middle age group (36 to 50 years of age) were found to be non-users of computer-mediated communication.

This finding is logical for several reasons. Younger subjects would have had computer experience as part of their graduate education and thus not only have experience but have integrated the computer into a variety of their professional activities. Older faculty members would have established routines and practices that they trusted and knew would accomplish their goals without having the computer as anything more than something with which to crunch numbers if they were so inclined. Reasons given to explain why non-users don't use CMC are examined later in this report and may illuminate the reason behind this finding more.

Table 3 Age by Users/Non-Users of CMC

	Users n	Non-Users n	Row Total
35 or younger	171	20	191 40.0%
36 to 50	153	75	228 47.7%
51 or older	20	39	39 12.3%
Column Total	344 72.0%	134 28.0%	478 100.0%

A significant difference was found between groups of different faculty titles on the basis of use/non-use of computer-mediated communication (x^2=13.09, p<.05). In considering the nature of this difference, Table 4 does not confirm the notion found in the literature that higher ranked faculty tend to resist the use of computer-mediated communication more than lower ranked individuals. As is apparent from Table 4, the group that differs most from the rest is the lowest raking faculty title, the instructor.

Also interesting in Table 4 is the fact that all the other groups of faculty rankings had 23 to 27% of their members as non-users of CMC. Therefore, on average, about a quarter of all faculty ranking groups except the instructor level were not using CMC. That this was true for assistant to full professor is remarkable given the previous discussion on the factor of age. It would appear that age is a better factor for understanding who does not use this new form of communication since titles may spread across age groups. Thus, a young full professor might be an avid user of CMC while an older assistant professor less likely to do so.

Table 4 Title by Users/Non-Users of CMC

	Users + Non-Users		Row
	n	n	Total
Instructor	18	20	38 7.9%
Asst. Professor	167	61	228 47.2%
Assoc.Professor	111	37	148 30.6%
Professor	40	12	52 10.8%
Other	13	4	17 3.5%
Column Total	349 72.0%	134 28.0%	483 100.0%

In considering the number of years teaching experience a faculty member had in relation to their use or non-use of CMC, a significant difference was found to exist (x^2=21.9, p<.001). An interesting result in this regard is the fact that those with the least amount of teaching experience (1 year or less) represent the group with the highest proportion of non-users. Almost 52% of those with a year or less experience did not use CMC. The group with the longest teaching records (ranging from 21-40 years) had the second highest proportion of non-users (40.7% of all subjects in this age group).

The group with the lowest proportion of non-users was the one whose members had been teaching for two to five years. Again, as with the other characteristics previously discussed, this finding seems logical because the group teaching 2 to 5 years would represent those who entered higher education at a time when computers were an integral part of their own learning experience and, unlike the new teachers, this group would have the opportunity to use it.. Overall, there is a tendency for the proportion of non-users in comparison with users to increase as the number of years teaching experience increased. This once again points to age as an indicator of non-use of this new means of communication.

Table 5 Years Teaching by Users/Non-Users of CMC

	Users n	+ Non-Users n	Row Total
1 year or less	15	16	31 6.5%
2 to 5 years	108	21	129 27.5%
6 to 10 years	91	38	129 27.5%
11 to 15 years	48	17	65 13.8%
16 to 20 years	39	18	57 12.1%
20 years+	35	24	59 40.7%
Column Total	336 72.0%	134 28.0%	470 100.0%

A significant difference was found to exist between faculties on the use/non-use of CMC (x^2=61.4, p<.001). In examining the results here, several types of groups were found. One group stood out in this regard from all the others and that was the Faculty of Arts. For this group of academics, more than half (55.4%) of all the members in this group were found to be non-users of computer-mediated communication. This group represented heavy non-use.

A more moderate set of users was the second type of faculty discovered here. In this regard the Faculties of Medicine, Social Science, and Education had less than 30% but greater than 25% of all the members in each group as non-users. Thus, in each of these faculties, more than two-thirds were users of CMC but still a sizeable chunk of their members were not accessing this new means of communication.

Another set of faculties had even fewer numbers of non-user members. Faculties of Science, Law, Business, and Architecture had low proportions of non-users in comparison with users in their individual faculties. In each of these groups, about 15% of all members of that specific faculty were not using computers for communication. For hard sciences this is understandable because the use of computers for communication has a long established history of serving scientists in their efforts. The other three faculties are all professional areas of study and so the use of CMC may be serving very practical applications for these groups. More research is needed to explore why these faculties are low among the non-users in the university context.

Table 6 Faculty by Users/Non-Users of CMC

	Users n	+ Non-Users n	Row Total
Architecture	12	2	14 2.9%
Arts	45	56	101 21.2%
Business	33	6	39 8.2%
Communication	9	1	10 2.1%
Dentistry	7	0	7 1.5%
Education	31	12	43 9.0%
Engineering	35	3	38 8.0%
Law	11	2	13 2.7%
Medicine	48	22	70 14.7%
Science	63	11	74 15.5%
Social Sciences	42	17	59 12.3%
Other	7	2	9 1.9%
Column Total	343 72.0%	134 28.0%	477 100.0%

Finally, two of the faculties represented in this research had very low proportions of non-users. The Faculty of Communication had just 10% of all its members as non-users. The Faculty of Dentistry did not have one member who was a non-user of CMC. For Communication, it is logical that people who study how messages are transmitted would likewise employ a diversity of means of communicating, and among these would be computer-mediated communication activities. Therefore the low proportion of non-users here is not surprising. What was surprising was that educators in dentistry were using this means so extensively. In stark contrast to their colleagues in the Faculty of Medicine, these physician-educators seemed extremely well connected to this form of communication. Why this is so is not readily apparent and should be examined along with the further exploration of use/non-use of CMC in professional studies.

In this research, subjects were asked their first language in order to determine the impact this variable might have on their use or non-use of CMC. This was considered important since Hong Kong is a society with two official languages (English and Cantonese) and a third (Mandarin) that is increasingly important. As well, it is an international city that attracts people from all over the world. The university context is somewhat of a microcosm of this society with faculty from many different national backgrounds and having many different first languages. Since much that CMC has to offer is in English, does this have an effect on use?

Table 7 First Language by Users/Non-Users of CMC

	Users n	+ Non-Users n	Row Total
English	92	24	116 24.0%
Cantonese	215	88	303 62.7%
Mandarin	25	14	39 8.1%
Other	17	8	25 5.2%
Column Total	349 72.0%	134 28.0%	483 100.0%

In considering this, no significant differences at the .05 level of probability were found between first language groups on the basis of use/non-use of computer-mediated communication. Non-users of all language groups represented a range from 20.7% of

all members of the group of English as first language to 35.9% of the Mandarin as first language group. Cantonese speakers, the largest numerically of all groups, had 29% of all its members as non-users of CMC. Those whose first language was one of the other Asian or European languages had 32% of all their members as non-users. So, while English first language speakers did have a lower proportion of non-users, this was not statistically significant.

The context, once again, may help explain this. Individuals teaching in Hong Kong universities must either have the ability to teach in English or Cantonese. For non-Hong Kong people, the obvious choice would be English fluency. Hong Kong faculty, the natural Cantonese speakers, represent the cream of the crop academically to make it through what has been an elite education system. Therefore, their competency in English most probably is very high, comparatively, at least in the written form of communication. So, while faculty in Hong Kong may differ on the basis of their home languages, they may all have the same basic competency to use CMC and thus make language, like gender, a characteristic that is not revealing in distinguishing non-use of computer-mediated communication.

Reasons for non-use

Why did these individuals decline to use CMC? The questionnaire used in this research contained an open-ended question asking non-users the reason why they did not use computers for communication. After the data was collected, responses to this question were considered and categorized into 15 reasons. Twenty-seven non-users of CMC declined to answer why they did not use it. Table 8 shows each reason listed by those who did respond. As subjects could answer this freely, more than one reason for non-use was recorded in the cases of some subjects.

As Table 8 indicates, the reason most often given by non-users for not employing CMC of any kind was simply the fact that other means of communication were adequate for their needs. A little more than a quarter of all respondents noted that they had no need for the communication possibilities available by computers. Another reason noted by subjects not using CMC was that they did not know how to use their computer for communication purposes. In this regard, 16.4% answered it was their lack of knowledge of how to use the system that kept them from using it. Almost as many subjects noted the reason for not using CMC was a lack of time. While CMC does in many ways accelerate the communication process, it can also be a communication medium that expends or wastes time as well. Waiting for connections, searching for answers, and just examining the very possibilities that the internet offers takes time that many subjects said they did not have available.

Table 8 Reasons for not using

	Noted		Not Noted		Total
	n	%	n	%	%
Not needed	34	25.4	100	74.6	100.0
Don't know how	22	16.4	112	83.6	100.0
No time	20	14.9	114	85.1	100.0
No connection	17	12.7	117	87.3	100.0
No university connection	9	6.7	125	93.3	100.0
Not applicable	8	6.0	126	94.0	100.0
No interest	7	5.2	127	94.8	100.0
Someone else connects	6	4.5	128	95.5	100.0
Cant learn	6	4.5	128	95.5	100.0
No computer	5	3.7	129	96.3	100.0
No content	2	1.5	132	98.5	100.0
Too costly	2	1.5	132	98.5	100.0
Uses other applications	2	1.5	132	98.5	100.0
Other	8	5.9	127	94.1	100.0

(n=134 for each reason)

Some people noted that their reason for not using the communication opportunities available on the Internet was due to the fact that they did not have the technical access to it. Some expressed this as personally not having an internet connection (12.7%) while others noted that their university had not provided them with the capability to connect (6.7%). A few individuals responded that they did not even have a computer with which to make a connection if one were available (3.7%).

The perceived lack of appropriateness that CMC had to their lives seemed to be another factor that resulted in the non-use of CMC by many subjects. Six percent of all non-users said they didn't use CMC because it had no relevance to their area of study. Approximately 5% noted flat out that they had no interest whatsoever in the content of CMC and therefore did not attempt to use it, while 2% said there was no worthwhile content available via CMC to merit their use of it. Given the fact that seemingly limitless information on any conceivable topic is available via the Internet, these responses may be more indicative of lack of awareness of the potential rather than a true irrelevance to any particular discipline.

Several other reasons were noted but infrequently. Some people (4.5% of all non-users) noted that they personally did not use CMC but had someone else (secretaries or colleagues) use it for them. This might mean, for example, someone else sending a message via e-mail or checking for an e-mail address on a web page. A few subjects (4.5% of all non-users) noted they felt incapable of learning how to use CMC. Finally, some respondents noted they didn't use the system due to the fact they were using their computer for other, more important applications or because it was too costly. This latter reason is hard to understand given the fact that academics have free access to the internet and the plethora of computer-mediated communication potential it offers through their university computer system.

Differences between groups on the basis of characteristics

When an examination of differences between characteristic groups was conducted, no statistical differences were found at the .05 level of probability for groups by title and first language. This was also true, for the most part, in the consideration of gender, age, number of years teaching, and faculty. However, there were a few cases in which statistically significant differences were found to exist between groups on their reasons for not using CMC. These are explained below.

Gender

The one significant difference (x^2=7.5, p< .01) that was discovered between males and females on the reasons given for non-use was in the area of who made the connection for the individual. As seen in Table 9, females responded more often that someone else made their computer-mediated communication connections. While 14% of all females said someone helped them connect, only 2% of all males said this was so.

Table 9 Gender by Reason: Someone Else Connects

		REASON		
		Noted	Not noted	Row Total
GENDER				
Male		2	103	105
				78.4
Female		4	25	29
				21.6
	Column Total	6	128	134
		4.5	95.5	100.0

Age

Chi square analysis revealed a significant difference (x^2=6.69, p< .05) between age groups on the reason for non-use being not knowing how to use CMC. Table 10 indicates the age group 36 to 50 years of age were less likely to note this as a reason than the other age groups. Less than 10% of non-users aged 36 to 50 years old cited this as a reason while 23-30% of the other groups did note this was a reason. So, those individuals in the middle age group were more likely to know how to use computers but choose not to for other reasons more so than the members of other groups.

Table 10 Age by Reason: Don't Know How

	REASON		
	Noted	Not noted	Row Total
AGE			
35 or younger	6	14	20 / 14.9
36-50	7	68	75 / 56.0
51 or older	9	30	39 / 29.1
Column Total	22 / 16.4	112 / 83.6	134 / 100.0

There was also a significant difference (x^2=6.08, p< .05) between age groups on the reason given as the inability to learn. Interestingly, by looking at the frequency of responses in Table 11, it was the younger group here that indicated this reason more than the older groups. Fifteen percent of the younger group said this was why they didn't use CMC while less than 3% of the other groups noted this as a reason.

Table 11 Age by Reason: Can't Learn

	REASON		
	Noted	Not noted	Row Total
AGE			
35 or younger	3	17	20 / 14.9
36-50	2	73	75 / 56.0
51 or older	1	38	39 / 29.1
Column Total	6 / 4.5	128 / 95.5	134 / 100.0

While it is not clear why this group may feel inadequate to the challenge of learning this new mode of communication, this result does challenge the notion that older individuals in the university organization are opting out of the communication revolution because of feelings of inability to learn.

Number of years teaching

There was a significant difference by the number of years teaching on the reason for non-use being because it was too costly Only two subjects said that they didn't use CMC because it was too costly and both of them were teachers for 2-5 years. All other groups responded in the negative for this. (x^2= 10.92496, p< .05).

Table 12 Years Teaching by Reason: Too Costly

TEACHING	REASON Noted	Not noted	Row Total
1 year or less		16	16 11.9
2 to 5 years	2	19	21 15.7
6 to 10 years		38	38 28.4
11 to 15 years		17	17 12.7
16 to 20 years		18	18 13.4
More than 20 years		24	24 17.9
Column Total	2 1.5	132 98.5	134 100.0

Faculty

Statistically significant differences were found between groups of faculties on three reasons for non-use. One of these reasons for non-use was the lack of time (x^2=28.77, p< .01). In this regard, Engineering, and Social Science faculties had approximately a third of their members indicating this response was a reason for their non-use. As well, all non-user law subjects reported this was a reason for their non-use. For all the other groups, this reason was given less than 10% of the time and three faculties (architecture, business and communication) failed to note this was a reason at all.

Table 13 Faculty by Reason: Lack of Time

FACULTY	REASON Noted	Not noted	Row Total
Not Noted	1		1 .7
Architecture		2	2 1.5
Arts	4	52	56 41.8
Business		6	6 4.5
Comm.		1	1 .7
Education	1	11	12 9.0
Engineering	1	2	3 2.2
Law	2		2 1.5
Medicine	4	18	22 16.4
Science	1	10	11 8.2
Soc. Sci.	6	11	17 12.7
Other		1	1 .7
Column Total	20 14.9	114 85.1	134 100.0

As seen in Table 14, a second reason given where statistically significant differences were discovered between groups by faculty was the subjects reporting they did not know how to use CMC (x^2=23.17, p< .01). Again, all non-user subjects from the Faculty of Law indicated this was a reason they didn't use CMC. One other group that was different from the others here was the Faculty of Medicine where almost a third of all non-users said this was their reason for non-use. While a few other faculties (Business, Education, and Science) had between 16 and 18% of their members noting this as a reason, all of the others were either very low in percentage of response (Social

Sciences) or no one noted this as a reason at all (Architecture, Communication, and Engineering).

Table 14 Faculty by Reason: Don't Know How to Use

FACULTY	REASON Noted	Not noted	Row Total
Not Noted		1	1 .7
Architecture		2	2 1.5
Arts	6	50	56 41.8
Business	1	.5	6 4.5
Comm.		1	1 .7
Education	2	10	12 9.0
Engineering		3	3 2.2
Law	2		2 1.5
Medicine	7	15	22 16.4
Science	2	9	11 8.2
Soc. Sci.	1	16	17 12.7
Other	1		1 .7
Column Total	22 16.4	112 83.6	134 100.0

As seen in Table 15, the faculties that differed on this variable were once again Law where all subjects noted this and Business, where approximately 17% of all subjects cited this as a reason for their non-use. Other than the Social Sciences (5.9% of all members) and the Arts (3.5% of all members), no other faculty had subjects noting this as a reason for their non-use of CMC.

Table 15 Faculty by Reason: Someone Else Connects

FACULTY	REASON Noted	Not noted	Row Total
Not Noted		1	1 .7
Architecture		2	2 1.5
Arts	2	54	56 41.8
Business	1	5	6 4.5
Comm.		1	1 .7
Education		12	12 9.0
Engineering		3	3 2.2
Law	2		2 1.5
Medicine		22	22 16.4
Science		11	11 8.2
Soc. Sci.	1	16	17 12.7
Other		1	1 .7
Column Total	6 4.5	128 95.5	134 100.0

Discussion

Computer mediated communication has the potential to broaden the communication effectiveness of individuals in general and especially those working in academia. The literature suggests that university teachers can exploit CMC to improve teaching, research and administrative responsibilities (see Elliott, 1996 for a summary of these educational benefits). Yet fully a quarter of all Hong Kong university teaching staff are not exploiting these opportunities at all. The findings of this research give a face to those not using this new form of communication and their reasons for not doing so and those findings are revealing in many ways.

In profiling non-users of computer-mediated communication, the results of this research conform to previous research findings on age as a factor in considering non-use. The non-user in this study was typically older as seen in the fact that two-thirds of those in the highest age category group were non-users as compared with just 10% of all subjects in the youngest category. Clearly, as age increased, so did the proportions of non-users.

However, other findings challenged other basic assumptions in the literature. Foa (1993, p. 27) stated that senior staff members of universities were most resistant to implementing new communication technology. This was not found to be the case in this research. Professors had roughly the same proportions of non-users as both the assistant and associate rankings of faculty. The level of faculty ranking that was distinctly different from the others was the instructor level. In this category of university rank more than half of all subjects were found to be non-users. So, Foa's assessment seems to miss the fact that those working at the lowest ranked level of the teaching hierarchy are most likely to be out of the loop of CMC use.

What explains this finding? Seemingly this contradicts the previous finding that saw increased occurrences of non-users as age was greater. That rank is not always linked to age may explain this in part. Yet understanding why professors are not high by percentage in the number of non-users of CMC may be due to the research demands placed on them in the restructuring of Hong Kong's financial allotments for universities. With part of financial allocations linked directly to research output, pressure to use all possible means to enhance the research effort is significant. Also, professors are given administrative duties that would demand the use of e-mail at the least for completion of their responsibilities.

Why then are instructors such a large segment of non-users proportionately? The reason does not appear to be due to a lack of resources available to them as indicated by their responses to the question seeking to understand their non-use. All non-users in the instructor category said they had computers. Only 20% of all non-user instructors said they had no CMC connection and just 10% said they didn't know how to use the connection they had. The reason most offered was there was no perceived need to use this form of communication. This could be because instructors may be more involved in teaching or tutorial activities with clearly designated responsibilities outside the scope of computer-mediated communication activities or at least don't perceive any significance to their work in this regard.

Two groups of teaching staff tended to have higher proportions of non-users of CMC than others: the newest faculty members and those with the longest teaching experience. Those faculty members with the least amount of teaching experience might well be expected to have many immediate tasks on their mind that might make learning

and using new sources of communication a luxury they could not afford. The high proportions of non-users in the group with the most teaching experience may be linked once again to the concept of age. Support for this can be seen in the fact that progressively, as the number of years teaching increases, so do the proportions of non-users in each group. A longitudinal study is needed to track this situation over time to determine if the tendency continues or if, as the current "new" faculty becomes more experienced they employ CMC as part of their communication repertoire. Also, it would be interesting over time to see if the numbers of non-users among faculty with the most experience drops as retirements diminish the numbers of those without computers as a central part of their educational process.

An interesting characteristic that was found to be different from the general literature on those not using computer-mediated communication was gender. Most of the literature indicates that computer-mediated communication in general is dominated by males. This was not the case in the context of Hong Kong's universities. Gender does not appear to be a factor identifying one group as non-users more than another as for both sexes, approximately 28% of each group were non-users. Females are using computers to communicate on an equal footing with their male colleagues. There is just one indication that the technophobia attributed to women regarding computers exists somewhat in the academic environment and that is in the finding that more females than males have someone else do their computer-mediated communication for them. However, this research does not distinguish specific applications and the reasons for so using them that might shed some light on this. More research is needed to understand beyond the consideration of use, how application of that use may possibly differ.

Another interesting finding was related to the first language of the subjects of this study. Since so much that is available via computer-mediated communication is in English, an analysis was conducted to determine if this was a limiting factor in use. In the academic community of Hong Kong, first language differences did not significantly define any language group as being a more likely candidate for not using CMC. Possibly this is due to the fact that education levels and English language fluency required for job entry make this a moot point. Also, software in the native languages of staff members that might pose a challenge to others may be an integral part of the faculty member's way of processing information. Thus, non-English first language faculty members might have access to more information than the native English speakers because they can partake of a broader base of information.

One fact is clear when considering who tends to be a non-user of computer-mediated communication by faculty. The Faculty of Arts members have, by far, the greatest proportion of non-users of all faculty groups. More than half of all subjects in this faculty noted they did not use CMC at all. This may be because of the British

education tradition whereby students in the arts receive little or no science or computer background from an early stage in their secondary school education. This would work against implementation in their professional life as academics as well.

During the interview process, members of one faculty consistently expressed to interviewers that their schedules were extremely busy. This being the case, it is not surprising that the Faculty of Medicine was the group which had the second largest proportion of non-users of CMC. Close behind this group were two faculties which are puzzling in their non-use frequencies. The Faculties of Education and Social Science both had about 30% of their members as non-users of computer-mediated communication. This is unusual given the fact that both these educational areas have potentially much to gain from communication available via computer.

Those faculties with low proportions of non-users are equally puzzling. While it is understandable that the Faculty of Communication would readily be users of this form of communication, why is the Faculty of Engineering likewise low in non-use in this regard? And the Faculty of Dentistry had no member that was not using their computer for communication purposes. What makes Dentistry as an academic area more likely to exploit CMC than the Faculty of Medicine? More research is needed to assess the use of computer-mediated communication by these groups to give indications why differences like this exist.

Many reasons were offered to explain non-use of computers for communication by academic staff in Hong Kong. The most basic and frequently cited was a lack of perceived need to do so. Without the motivation to learn this new way of communicating and then modify one's current communication behaviors in response to this, resistance, or at the least, apathy towards this revolution in communication was the likely outcome. Other reasons submitted by non-users for their lack of use of CMC included lack of knowledge about this form of communication, lack of personal access to it, and lack of time to exploit it. A valuable finding in the attempt to understand those not involved in CMC was the definition of three basic prerequisites that are needed to use it: equipment, know-how and motivation. If there is a lack in these among faculty members, then most likely that individual will rely on other means to communicate or access information.

A few differences existed among groups on the reasons given for not using CMC. Interesting to note among these is the fact that on differences among age groups on the reason for non-use being inability to learn the new way, those reporting this most were not the older group but in fact the youngest. Also curious was the finding that the reason for non-use by a small number of subjects was because to do so was too costly. This is unusual since the use of computer systems in universities is without cost to the faculty member. It is a vital part of the resources available with which to complete

the responsibilities of teaching, research, and administration. So, either these individuals are unaware of the resource freely available to them or are defining cost in another fashion.

By considering the non-user of CMC in the context of the university, a clearer indication of how this part of the communication revolution is unfolding is seen. And yet this research has pragmatic applications as well as adding to an understanding of the implementation of a new form of communication. In practical terms, it helps to identify those who have much to gain from CMC and yet have not taken advantage of the potentials that exist. Some faculty groups don't use CMC because they just don't know how. Some subjects are using it through a second party. Some have a combination of reasons, like lack of time and understanding, that eliminates them from usage. By pinpointing who is not using CMC and understanding the reasons for this, steps can be taken to make computer-mediated communication more accessible and thus activate the academic bystanders into this important part of the communication revolution.

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